THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LV. SATURDAY, AUGUST 10, 1889. No. 6.

ORIGINAL ARTICLES.

HYDRONEPHROSIS AND RENAL ATROPHY; ESPECIALLY AS RESULTING FROM FUNCTIONAL DISTURBANCES OF MICTURITION.

BY ROBERT T. EDES, M.D.,

OF WASHINGTON, D. C.,

FORMERLY PROFESSOR OF MATERIA MEDICA AND JACKSON PROFESSOR OF CLINICAL MEDICINE IN HARVARD UNIVERSITY.

HYDRONEPHROSIS is a dilatation of the pelvis and calyces of the kidney from retention of the secretion. It may vary from the slightest stretching of the pelvis beyond its normal dimensions, with perhaps a slight flattening of the papillæ, up through all the stages of gradual distention of the cavity and atrophy of the renal substance, until the kidney becomes a mere shell of fibrous tissue, to which are attached a few remnants of true renal parenchyma retaining somewhat of their structure and function. This condition may affect both of the kidneys, or one of them, or in some cases only a part of one.

It is so nearly always the result of a demonstrable anatomical obstruction in the normal flow of the urine that, in the few cases in which the exact seat and nature of the obstruction cannot be discovered, it is fair to conclude that the exception does not indicate an independent pathology, but simply that hindrances may exist which are not obvious to the sound or on the dissecting table. This remark applies quite as fully to congenital as to acquired hydronephrosis.

The object of my paper is to suggest that in some of these exceptional cases the search, if prosecuted during life physiologically and clinically, will reveal causative conditions not evident upon the post-mortem table, but, notwithstanding, really sufficient for the effect produced.

The points at which obstructions may occur are many; and according to their positions will be the amount and character of the changes existing above them; not only the dilatation, which is the subject of the present paper, but the inflammatory and degenerative alterations in addition. These lesions have been carefully studied and described, and I will take but a few moments in a brief recapitulation.

The ureters may be occluded by a calculus at any point from their exit from the pelvis to their entry into the bladder.

Wounds or blows on the back may cause compression of the ureters by means of hemorrhagic or inflammatory effusions.

An obstacle may also exist anywhere in their length in the form of a valve or fold, constituted either by the mucous membrane or by the whole thickness of the tube. Such a valve, although retaining the secretion most of the time, may be pervious under some states of distention or position; and in this way are formed the so-called intermitting hydronephroses. Folds or kinks existing in the ureters have long been recognized as obstructions, but it is possible in some cases that these may be, in part at least, secondary, inasmuch as when a hydronephrosis occurs from other causes which may be temporary, the ureter is not only dilated but also lengthened, and is obliged to form a fold in order to accommodate itself to the surrounding parts. They are frequently, however, of such form and in such numbers that no such explanation is admissible.

The ureters may be congenitally impervious through the whole or in any part of their course. (*Trans. Path. Soc. London*, xv.; *Bull. Soc. Anat. de Paris*, 1867, xxxi. 11, 305.) They may have no opening into the bladder or even attachment to it. (*Med. Times and Gaz.*, 1876, i. 546.) In some such cases there is an attachment to the rectum but without an opening into it. (Gerster: *N. Y. Med. Journal*, 1878, xxviii. 511.) When arrested or irregular development of this kind occurs in the ureters, it is not uncommon, in fact usual, to find associated with it other deformities, frequently of the intestinal canal, but often of entirely separate regions; as, for instance, the hands and feet, showing a tendency in this direction more than local. There have been instances where a woman has borne several hydronephrotic children in succession.

Whenever the obstruction exists long enough there will be a dilatation of the parts above, not necessarily everywhere equal, since the ureters differ in density and in the amount of outside support they receive at different parts of their course. It is not unusual to find in the course of a ureter which is elsewhere considerably dilated, points at which it retains its normal calibre. One of these points is likely to be found just where the pelvis of the kidney joins or becomes the ureter.

Compression of the ureters may be caused by bands of adhesions and in a few cases by a branch of the renal artery passing across them.

Among the more common external obstacles are to be found pelvic tumors and in particular cancer of the uterus. Displacement of the uterus, and in particular prolapse, can have this effect by twisting and dragging on the ureters.

The brim of the true pelvis, where the ureter makes a somewhat abrupt turn, and is especially liable to compression in passing from the abdominal cavity down behind the bladder, may cause an obstruction to the flow of urine, as will be shown by the difference of calibre, the tubes being dilated above and normal below. (*Medical Record*, 1887, xxxii. 734.)

As we come lower, omitting the bladder itself, which will be more fully discussed later, we may find the obstacles where the urethra leaves the bladder. This may be absolutely impervious, there being no orifice whatever, its proper position being indicated by a papilla (Billard: *Maladies des Nouveau nés;* Lehmann: *Nederland. Weekblad.*, 1853, No. 12); or there may be an adhesion of the sides of the urethra in this region too strong to be overcome by the pressure of urine, but yet easily broken up by an instrument passed in the usual way, which relieves the distended bladder and removes its cause, or cutting may be necessary. (Lamotte: *Traite des Accouchements;* Smellie's *Midwifery.*) In other cases nearly the whole urethra may be obliterated or wanting (Lehmann, loc. cit.). It may, like the ureters, be obstructed by a valve of mucous membrane. (*Bull. Soc. Anat. de Paris*, 1869, p. 130.)

In the adult the hypertrophied prostate is a not infrequent obstacle, and gives rise to an incipient or moderate bilateral hydronephrosis, as in the specimen just shown by me,[1] and in one by Dr. Prentiss (*Maryland Medical Journal*, April, 1883), and in many others too numerous to quote.

The function of the kidneys may not be seriously disturbed for a long while.

If a cystitis is added, as it is likely to be, we may then have, not a simple dilatation of the passages, but, from the fact that it is an inflammatory urine which is backed up into the kidneys, a pyo- instead of a hydro-nephrosis.

This list is to be extended by the mention of strictures of the urethra, of which there are several specimens in the Army Medical Museum, and of papillomata in the neck of the bladder.

Finally, the prepuce may present an efficient obstacle in the form of a phimosis, although the irritation of an adherent foreskin may lead to hydronephrosis by another chain of causation, as will be seen later on.

Many of the conditions mentioned can, of course, exist only in the fœtus or the newborn. Where a sufficient amount of depuration of the blood can be carried on by the circulation of the mother without reference to the activity of the fœtal organs, one or both kidneys may, even if entirely obstructed, continue to grow into the enormous tumors of this kind sometimes met with. A certain amount of time is requisite for the development of an extreme degree of hydronephrosis. It is a process of growth and not simply one of distention, and since after separation from the mother an absolutely complete occlusion of both ureters in the child must lead to death by uræmia before the dilatation can reach its extremest limits, we meet with the most striking examples of double hydronephrosis in connection with impervious urinary passages only in the fœtus or the newly born. The abdominal swelling in some of these cases of congenital hydronephrosis may be so great as to constitute a serious hindrance to delivery or, on the other hand, the pressure during delivery may be so great as to force a passage of the urine in spite of the resistance and empty the sac.

In adults an absolutely impermeable obstruction may exist upon one side and a slight or moderate hydronephrosis be formed in consequence, but, when the dilatation is bilateral or when it is extreme on one side, it must have been the result of an obstacle sufficient to increase the pressure under which the urine was secreted during a long time, but not sufficient entirely to stop it at once. The stoppage may finally become an absolute one, but cannot have been so from the beginning.

It is a curious fact that the amount of urine passed against a certain degree of back-pressure instead of being diminished, as we should naturally expect from a knowledge of the physical laws governing this secretion, is increased. The back-pressure, when not too great, seems to act as a stimulant to the secreting structure. If, however, it gets beyond this point, the secretion obeys the ordinary law of physics and takes place more slowly.

After the consideration of these and all similar causes for hydronephrosis, we are likely to meet with cases which are not to be explained thereby. My former instructor, Prof. J. B. S. Jackson, went so far as to say that in a large proportion of cases, so far as he had seen, no cause whatever could be assigned. We may accept, as expressing the general conclusion in the matter, the words of Roberts, who says, "There are cases which must at present be regarded as mechanically inexplicable." I propose now to examine a case or two of my own with reference to the causation and compare them with a few observations I have been able to find in medical literature.

CASE I.—A boy, aged five, was seen by me in December, 1882, with my friend Dr. Gilbert, of Dorchester. He looked rather less robust than his younger brother and sister. He had always been

[1] To the Medical Society of the District of Columbia.

in the habit of wetting his bed and clothes. Recently his habits had improved, although he still passed a small amount of urine in his clothes. He did not, however, entirely empty his bladder in this way, as his mother said he could always pass water whenever they tried him. There was no difficulty in micturition. He passed a full stream. The daily quantity was considerably increased and was of low specific gravity with a small amount of albumin and a slight sediment of small cells, but no casts. Two years later the urine was still lighter and it contained albumin, but no casts. A short time before his death he had several attacks of retention of urine. He had headache for a month or two, and his death was immediately preceded by convulsions.

At the *autopsy* the body was found emaciated. The heart was hypertrophied, especially the left ventricle. The right kidney was represented by the dilated pelvis and a small nodule of secreting structure at one end and a few thin pieces elsewhere; right ureter dilated. The left kidney somewhat atrophied, mottled with yellow, lobulated, capsule adherent, pelvis and ureter slightly dilated, but much less than right. Bladder large, the walls more trabeculated than would be expected in a child of his age. No obstruction anywhere in ureters found. Free passage of water into bladder and free passage of sound in either direction. Urethra free to sound in either direction.

The next case lacks the confirmatory evidence of a post-mortem but presents what is better, the result of treatment directed to the relief of the causative condition.

CASE II.—A rather delicate girl, aged three, was seen by me in consultation with Dr. Rice, of Grafton, Mass., in January, 1886. She had had a convulsion in the previous July and some feverish attacks since. She had passed urine in large quantity and with some effort for some months, and these were all the obvious symptoms. The urine was of low specific gravity and contained a large trace of albumin with pus, blood, epithelium from the neck of the bladder, renal epithelium, and some casts. A previous examination had discovered some epithelium from the pelvis of the kidneys. She was placed on the benzoate of lithium, with which her general condition improved, and she went through the night without passing water, but the albumin, pus, and casts remained, and were noted on several examinations up to March 7th. On the 8th the bladder and urethra were examined under ether. She passed a full stream of urine and a large bougie entered the bladder without difficulty. A probe detected a little roughness (trabeculation?) at times, but nothing more. On the 26th of March her mother wrote to me that she had seemed much better, appetite very much improved, and since the examination *decided decrease in the effort to pass water.*

The next examination of urine, of which I have a record, shows there was a deposit of pus and some albumin present, but no casts were found after a somewhat prolonged search and only a few large cells.

The urine of June the 14th was opalescent and deposited only a flocculent stratum of pus. One hyaline cast of medium size was found after searching a number of drops. On the 15th a large taper-pointed catheter was introduced into the urethra for puposes of dilatation, and the urine drawn contained neither pus nor casts, and only a small amount of albumin. On the 23d there were a few scattered leucocytes and no casts. Some time in the winter of 1887–8 the urine contained a trace of albumin, but in July, 1888, the attending physician writes that "It is free from albumsn and the patient is the picture of health."

If we take into consideration cases where hydronephrosis coexists with thickened bladder and a severe chronic cystitis, and where the dilatation is fairly referable to the increased frequency of micturition and the spasmodic contraction of the bladder, we can find a considerable number.

CASE III.—In a case under my own observation (seen with my friend, the late Dr. Arnold, of Roxbury, in its last stages), a boy had attacks of dysuria from irritability of the neck of the bladder, and probably cystitis, from the age of six to nine. For some time before his death the urine was pale, scanty, purulent, and ammoniacal. He died with uræmic symptoms. The bladder was thickened and the ureters dilated. The right kidney was represented by a nodule the size of a pea on the outside of the membranous bag. There remained of the left kidney one round mass at the lower end three-quarters of an inch in diameter, and two or three other smaller ones.

I think we have in the first two of these cases a complete and a fortunately incomplete instance of the class recognized by all writers on this subject as "mechanically inexplicable"; inexplicable—that is, if we regard only the conditions found after death or by surgical examination, since we find a hydronephrosis with indications of increased work on the part of the bladder, but the passages everywhere freely permeable to instruments in either direction; *not* altogether inexplicable, if we regard the action of the bladder and the function of micturition.

The amount of back-pressure in the kidneys required to produce a complete compression of the secretion is estimated at about one and six-tenths inches of mercury, while less than half an inch will greatly impair it.[1] Since, then, in most cases of hydronephrosis the secretion is not checked, but the contrary, we may safely say that a very small amount of back-pressure in the bladder, if constant or frequently repeated, is sufficient, after a time, to produce slighter grades of hydronephrosis with consequent destruction of kidney substance.

Normally, of course, there is little pressure in the bladder most of the time. Once emptied, it fills

[1] Wundt: Physiologie des Menschen, p. 434. Quoted by James: Physiological and Clinical Studies, Edinburgh, 1888.

again with urine coming down the ureters, partly perhaps by hydraulic pressure, but largely by the peristaltic movements analogous to those by which the intestinal contents are propelled.

To this there is little or no resistance on the part of the bladder until a certain degree of distention is reached, varying, not only according to its total capacity, but according to its irritability, when it is emptied by a contraction of one set of muscles and relaxation of their opponents.

It is stated that the detrusor urinæ is able to overcome the resistance of the sphincter vesicæ, but it comes within the personal experience of everyone who has been obliged by circumstances to delay the evacuation of the bladder after it has become overfull, that something more than overcoming a passive resistance is necessary in the act of micturition. There must be a simultaneous and harmonious relaxation of the sphincter as well as stimulation of the detrusor. In this respect micturition may be said to resemble vomiting, where efforts of the abdominal muscles are unable to evacuate the stomach until the cardiac orifice relaxes.

The function of the urinary bladder in receiving and discharging the urine at more or less regular intervals is not a purely passive one. It should be a pump as well as a reservoir. Its proper action in this way depends on a proper relationship between the forces that propel and those that restrain its contents, and when these forces are so disordered that it fails to perform its function, or performs it insufficiently, then more work is thrown upon the other propelling forces. These are: first, the pressure under which the urine is secreted, which, as we have seen, is but slight, since half an inch of mercury pressure will materially impair it; and, secondly, the peristaltic movements of the ureters.

During the normal act of micturition no urine can, of course, enter the bladder from the ureters, but since the emptying of the bladder occupies so short a time no harm is done. The amount of urine which accumulates in the ureters during this interval is too small to distend them beyond the proper limits. If, however, the contractions be very frequent and long continued there will be enough accumulation of urine in the ureters to cause their dilatation, and, subsequently, that of the kidneys. This dilatation, by weakening the walls of the ureters, will naturally tend to increase rather than decrease. Such frequent contractions result, as we well know, from various sources of irritation in the urinary tract, but especially from inflammation of the bladder itself, or of the urethra.

Suppose, now, on the other hand, the detrusor to be weakened relatively to the sphincter, or, what amounts to the same thing, the resistance of the sphincter to be increased, we may have a considerable accumulation of urine taking place against the constant elastic pressure of the bladder which is not, however, sufficient to empty it, and allow the flow from the ureters to go on again without resistance. We then have the condition of incontinence from retention—*i. e.*, a bladder full to overflowing, so often seen in the old, usually in connection with enlarged prostate, but not common in the young. The kidneys and ureters are thus working against a pressure, never very great perhaps, but always above the normal, exactly the condition to produce a gradual distention. If the voluntary muscles of the abdomen are called upon to assist the contractions of the bladder, the matter is made worse rather than better, for they cannot exercise so equal a pressure in every direction as the constrictors of the bladder itself, and the entrance to the ureters is not guarded, under the circumstances, as in the normal condition, by the contraction of the fibres immediately surrounding them. Urine may thus be forced upward as well as downward. The absence of the valvular condition of the entrance of the ureters into the bladder is expressly noted in two of the subsequent cases of paralysis of the bladder.

It will, of course, be understood that the amount of pressure required to produce dilatation in the course of weeks or months is an entirely different amount from that which would be necessary suddenly to dilate the organs to the size they may attain even in the more moderate cases of hydronephrosis. In fact, it would probably be impossible to arrive at this state of things by any rapid process.

Hydronephrosis, then, may take its rise in two distinct forms of faulty innervation, paralysis and spasm. This origin is not fully recognized in medical literature, but a few cases may be quoted in support of my view.

Augè (*Thèse de Montpellier*, 1878) reports a case of hydronephrosis from paralysis of the bladder, of which, however, the clinical details are too scanty to make it of much value for our purpose. The bladder was greatly dilated, it was thin, and the mucous membrane injected and punctated. The ureters were much dilated and the inferior orifices opened. The pelves of the kidneys were dilated and the tissues progressing toward atrophy.

The following somewhat resembles the first of mine. Bernard (*Journ. Sc. Méd.*, Lille, 1881, p. 546) describes the case of a child, aged thirteen, who had incontinence of urine, wetting the bed, and passing water into his clothes during the day; he could pass water whenever he pleased, with some difficulty, the jet being short, and he being obliged to contract energetically the abdominal muscles. When sounded, the bladder was found to contain a considerable quantity of urine, but there was no obstacle to catheterism, and no calculus. The mus-

culi recti abdominis were hypertrophied. There was a large quantity (three litres) of urine passed, which deposited muco-pus. After death the bladder was found to contain urine, pus, and blood, and was as large as the fist. Ureters dilated. Of the left kidney the structure was entirely gone; in the right the changes were less advanced, but there were abscesses. The ureters were without the usual valvular opening into the bladder, being without any intra-parietal portion. There was thickening of the walls of the bladder, and slight cystitis, but the urethra was normal.

James (*op. cit.*, p. 42) reports the following: A child had, at three, phimosis as the result of an injury. After this had been "pricked by a doctor," the swelling got better, and he seemed nothing the worse. He had then no incontinence. The incontinence began at the age of four. After this a feverish attack which weakened him, and, on admission to the infirmary at the age of eight, he looked thin and weakly. The prepuce was contracted and almost completely adherent to the glans. No pain, but great incontinence. There was increased frequency of micturition, often three or four times in an hour. Only a few drops of urine were passed at a time, and the bladder was never distended. The quantity of urine was probably increased, and it was pale, with a small amount of pus and renal cells. Circumcision gave temporary relief, but he finally died comatose.

The bladder was somewhat contracted, and its walls thickened.

There was no cystitis, but great roughness, owing to the hypertrophied muscular fasciculi and diverticula. The cavity of the bladder, when distended, was smaller than natural, and the walls about a quarter of an inch thick. There was no stricture in the urethra, and the openings of the ureters through the bladder-wall were normally patent. Both ureters were greatly dilated in their entire length; both kidneys were hydronephrotic.

The author remarks that this is one of three similar cases, in the other two of which the cause of the urinary irritation was the condition of the prepuce. He also mentioned other cases where incontinence, associated with an abnormally light urine, was relieved by circumcision.

The following references belong to cases which may have had something of this character, but in which the clinical details are not sufficient to enable us to classify them with certainty.

A case read by Dr. Acker to the Medical Society of the District of Columbia, on February 13, 1889: A child of five had phimosis, but was said always to pass a good stream. The urine was said to be normal, but latterly profuse. Death from tuberculosis. The bladder was thickened, and the ureters and pelves of the kidney slightly dilated.

Webster (*U. S. Med. and Surg. Journal*, June, 1835).

Ramsbotham (*Proc. Path. Soc. London*, 1848–49, p. 75).

Little (*Path. Trans.*, 1861–62).

Broadbent (*Path. Trans.*, xvi. p. 165). The reporter of this last case thinks there may have been a valve in the urethra because one was found in the ureter.

There is a point in the first one of my cases to which I should like to call attention, although not intimately connected with the subject of the paper —that is, the occurrence of hypertrophy of the heart in connection with a purely local disease of the kidneys. This has been noted in other cases, some of which I have come across in consulting the literature of the subject without this special object in view. It has occurred in cases of traumatic origin.

These facts are not in harmony with the theories largely held in regard to the connection of cardiac and renal disease, nor indeed with that which I have myself advocated, to the effect that this connection consists in a common dependence on a primary condition of the whole arterial system, at first functional, and afterward structural. They seem to show that, sometimes at least, the kidney lesion may be directly causative of the cardiac change, and without any intervention of arterial degeneration.

The following report cases of the kind:

Footner (*British Med. Journal*, 1878, xi. 57).

Weill (*Mèm. et Comptes Rendus de Soc. de Mèd. de Lyon*, xxiii. Pt. 2).

Soller (*Lyon Mèd.*, vol. xxxv. p. 233).

Is it not possible that some cases of interstitial nephritis in the young, even when they are accompanied by hypertrophy of the heart and by the other symptoms usually found in older persons, may originate in some local trouble, and not be so closely connected with a constitutional affection as those with which we are more familiar in persons in middle life? Certainly the causes to which we attribute, so far as we can, chronic interstitial nephritis are less operative in the young.

It seems to me not unreasonable to suppose that even that quite slight obstruction to the flow of urine may, by the mechanism described above, and without producing more symptoms than can easily be overlooked, set up an amount of renal irritation that will in time run into chronic interstitial nephritis; and that the back-pressure may be so slight as to fail to dilate the ureters and exert itself solely on the renal substance. This, I admit, is pushing my doctrine to its extreme limits and beyond the bounds of demonstration, but I offer the suggestion for what it is worth.

THE INFLUENCE OF CLIMATE AND SEASON UPON THE MANIFESTATION OF NORMAL AND ABNORMAL NERVOUS ACTIVITY.[1]

BY W. B. PLATT, M.D.,
OF BALTIMORE, MD.

WHEN we reflect that all intelligent—that is, co-ordinated—muscular movement, is dependent upon nervous impulses, and that without muscle contraction we have no possible way of manifesting life, much less intelligence, it is evident that the nervous centres should be placed under the most favorable influences to secure the greatest benefit to the individual and to society. The conditions which affect and direct action, are climate, race, and environment. We are, moreover, all aware how large a share climate is believed to have in the production of both race and environment. The individual who is able to rise above the most unfavorable conditions involving all three of these, and excel men of prominence who have attained their position under circumstances the most favorable, may be left out of our calculation. He so nearly escapes the laws affecting large bodies of his fellow-men as to entitle him to be called a genius.

We place *climate* first of all, since it is that which, acting through generations, is believed to aid so largely in establishing race, which helps to alter environment—that is to say, institutions—and which may be in part itself determined by the physical characteristics of the region affected.

We may measure normal nervous activity by the quantity or quality of its products, or, better, by both. To have something tangible we must take the products of a given State and compare them with those of other nations or states in amount and kind. There is hardly a country in the world where to-day such a comparison is fair unless it be between different portions of our own, making due allowance for such race differences as exist.

This great fact of race difference is constantly held before us as the cause of difference in production. The Caucasian races are more easily compared than others because they alone show a tendency to produce more than they can consume, to an advancement in science, art, inventions, and to constant accretions of capital.

The complexity of the subject is enormous. To single out one factor, such as climate, to measure and weigh its force apart from concurrent forces, would require a volume. The concrete fact, however, remains, that the world over, in cool not cold climates, at moderate elevations above the sea (within 1000 feet) we find in its greatest perfection, that constantly acting, intelligent nervous force which produces greater results in all fields than in warmer or colder regions.

That climate and season have a powerful influence for good and evil upon the organs of respiration and circulation has long been recognized, but that it has also an influence in certain definite directions upon the nervous system has been pointed out by only a few observers and recently, and has been almost lost sight of in the labors of this and kindred associations. The reason is not far to seek, since the relation of cause and effect is not as apparent as in the case of the thoracic viscera, and the difficulty of isolating their effect is greater in the case of neuroses. Some of the visible effects upon the nervous activity of individuals or nations, of climate and season, are only visible after generations or years, others may be noticed in weeks or months.

We must limit our inquiry to a few distinct types of nervous derangement characterized by striking evident phenomena, where we expect to show that a definite causal relation exists between climate and season and such nervous morbid action as is expressed in chorea, acute polio-myelitis of children, suicidal tendency, and neurasthenia. Here, also, might be included some of the peripheral neuralgias.

CHOREA.—In spite of the experiments of Brown-Séquard, who proved that in dogs the choreiform phenomena were probably due to some lesion in the spinal cord, later investigations point to the brain itself as the seat of the disease in man. Without going into the anatomical appearances sometimes found, how fright can be a direct cause of chorea, nor what the real relation of endocarditis to chorea is, we will look into the connection between climate and season to the disease in question. Weir Mitchell's and Gerhard's studies are the only ones where anything more than mention has been made of the subject. They showed conclusively, from a study of 170 cases of separate attacks of chorea, that it is far more common in cool than in warmer climates. In Baltimore, where more than 10,000 cases of all kinds have come under my observation at the Garrett Free Dispensary, I have not had 25 cases of chorea. Of this small number not one was black.

Of Dr. Mitchell's cases the number of attacks increased by an enormous bound from February to March, when it reached its maximum of 35, falling to 15 in April, rising again to about 18 in May, and continuing thus until July, when it slowly fell until December. These all occurred in the latitude of Philadelphia, and extended over a period of four years. The attacks appeared to have no relation to the rise or fall of the barometer, to the rain-fall, or to the thermometer, excepting as the relative rise is greater in the spring than in other months. The number of attacks did, however, show a remarkable coincidence with the number of storm-centres passing

[1] Read before the American Climatological Association, June 29, 1889.

within 750 miles of Philadelphia. The observations on this point extended over a period of two years, and the curves of the number of storm-centres and that of the attacks of chorea are almost parallel until the month of September.

As we have already noted that the chorea curve had no relation to that of temperature or atmospheric pressure at the place of occurrence of attacks, we must conclude that some other causes than these are in operation to excite the attacks in question. We might define chorea as a disease of childhood and youth, characterized by chronic, intermittent, muscular twitchings, without loss of consciousness, often accompanied by endocarditis, and caused by an irritation of the cerebral motor ganglia. It is a disease of cities rather than of the country, of whites rather than of blacks, of females rather than of males, of the spring months, and of cool climates.

Dr. J. K. Mitchell informs me that he investigated the relation of attacks of *apoplexy* to season at one time, expecting confidently to find some relation. He found, however, nothing in the least to indicate that any connection existed between them.

In regard to *acute polio-myelitis* of children, or *infantile paralysis*, Wharton Sinkler, of Philadelphia, found it immensely more frequent in that city in the hot than in the cooler months. The curve of the number of cases rises rapidly from May to the first part of August, falling abruptly to the first week in September, running then in an even course until November, when it fell to its lowest point in December. While its curve does not run exactly parallel to that of the temperature, the main course is very near it. Just as in cholera infantum and the diarrhœal diseases of children where the mortality and the degree of heat are closely related.

Concerning *suicide*, we see at a glance that race has much to do with its frequency. Those who believe that race and the peculiarities which cause the difference in races, are due to climate, will find support in the fact that negroes, for instance, very seldom commit suicide; carrying into cooler climates a peculiarity acquired by residence for many generations in a hot climate.

Savages have such an immunity from suicidal impulse, that we may in general define it as one of the diseases incident to civilization, one of the throes of the human race, painfully passing through stages of evolution which bring with them burdens too heavy to be borne.

The influence of climate and season upon suicide is most remarkable. S. A. Hill, in his *Statistics of an Indian Province*, shows that suicides, violent deaths, and wounds, are at a minimum in the colder months, increase in frequency during the hot and dry season, and remain high during the rainy season. The irritability of temper caused by prolonged heat and moisture is suggested by him as a reason. The same writer says that December is the month of most frequent conception.

The literature of suicide is enormous, as anyone who looks up the subject for any point connected with it will see. Dr. Pilgrim, in the July number of the *Popular Science Monthly*, says, "Suicides are most frequent in April, May and June. July and September have a good proportion, while they are fewest in October and November." M. Guerry is quoted as proving that some days of the month and week and some hours of the day are more often chosen than others for suicide. He found the greater number occurred during the first ten days of the month, due probably to the fact that wages were then received and spent more often than later in the month; their receipt being followed by dissipation, reaction, and self-destruction. There were likewise more cases occurring from Monday to Thursday. A French writer on the subject, Brierre de Boismont, shows that of 1993 suicides in Paris, most of them occurred between 6 A. M. and noon; thereafter regularly declining in frequency until just before sunrise. They are also said to be especially frequent shortly before breakfast-time, and very seldom just after dinner.

There are also epidemics of suicide due to social causes, which might as well be called "social nerve-storms." In Versailles, for instance, there were in one year 1300 suicides. The statistics of lunatic asylums show at certain times a much larger number of admissions of patients with suicidal tendencies than at others. Dr. Pilgrim quotes from the report of the State Lunatic Asylum of New York, showing that in July, 1850, there were admitted 28 suicidal patients. In that month, of 44 patients altogether admitted, 19 of them were suicidal. From the 12th to the 22d of the month there were 14 attempts to commit suicide among 8 persons.

To estimate correctly the influence of any one element, such as climate or season, we must see what other factors there are and eliminate these if possible. A recent writer, in an article entitled "Baits for Suicide," deplores the influence of a certain class of literature upon those likely liable to suicidal impulses, and dwells particularly upon two well-known works of fiction, *Lady Audley's Secret*, and *Aurora Floyd*.

One factor is age. Forbes Winslow (*Journal Psych. Medic.*) shows that the tendency to suicide first appears at from 10 to 15 years of age, is most frequent among males from 55 to 65, and among females from 65 to 75, in Great Britain. An imperfect education appears to be worse in its suicidal tendency than ignorance. Whatever we may think of the proverb that "Ignorance is the mother of devotion," we cannot call suicide a child of hers,

since suicide is absolutely less prevalent among the illiterate than among those who are more or less educated. Radcliffe, in "English Suicide Fields," etc. (*Journal Psych. Medic.*, vol. ii.) holds that nowhere is this relation of suicide to ignorance more manifest than in Great Britain; being more prevalent in the more highly educated districts. Farr attributes this with justice, not to the advancement of science and knowledge, but to the development of small trades, such as that of tailoring, shoemaking, and the like.

Sex is another important factor. In New York, in 1883, there were 161 suicides; of these, there were 134 males and but 27 females. Nationality plays a curious part, for of these, 70 were among the Germans, who, as far as worldly prosperity is concerned, are more prosperous than the other great immigrant class, the Irish. Religion and the lack of it have an important bearing. Except among the absolutely insane, a belief in a future life of reward or punishment, exerts a decided restraining influence on the tendency to suicide. Without this, suicide is a logical and welcome means of escape from hopeless despair, misery, or disgrace.

Well-marked insanity is another and with us the most important of influences in producing suicide, although, as we shall see, this in turn is greatly influenced by climate. In England, in 1865, there were 1600 suicides; most of these attributed to insanity. How many more there might have been may be seen from the fact, that during this year there were in insane asylums 6096 patients with suicidal tendencies. The English believe that most of their suicides are to be found among the insane, and fewer due to despair, remorse, and sense of disgrace, which act as powerful motives on the Continent. Aside from well-marked insanity, in the popular acceptation of the term, the passions are the most important direct cause of suicide. Imitation is a most important exciting element in suicide. The mere mention of some remarkable or striking mode of self-destruction, is sure to be followed by a number of similar cases over a large area, and this area would, we believe, be found to correspond pretty closely to the region reached by the newspaper account of the case in question. It is well known that melancholic insane are the most suicidal in their tendency. In four years there were 2106 patients in the Utica Asylum for the Insane. There were 512 cases of melancholia, and of these there were 130 suicidal patients, or 35 per cent. This is about the usual per cent. There were but 50 cases among the remaining inmates.

Among suicides from disgrace, military sentiment, etc., may be mentioned the case of the son of the famous Marshal Wrangel, who, finding that his son, an officer in the army, had utterly lost caste in consequence of his misdeeds, paid all his debts, and said "Now there is but one thing further for you to do, you will find what you need in the next room," referring to a loaded pistol which he had laid upon the table, and the son, truer to military tradition at last than at the first, took the hint without delay. The instance of Rudolph of Austria is too well known to require further comment as a result of passion and mistaken sentiment. When, however, we take large areas among various nations and find that suicide is far more common in cool than in warmer climates, we are compelled to admit that climate is one great causal factor. Explain it as we will, call its influence direct or indirect, there are far more suicides in northern than in southern countries. Dr. Grissom, of North Carolina, in whose asylum there are on an average 200 insane, has never had a suicide, and we think no one would venture to believe that institutions for the insane have better management or attendance in the South than in the North. He (Dr. Grissom) is said to have attributed this remarkable immunity to the restraint system. The statistics of the Maryland Hospital for the nsane, near Baltimore, whose able and intelligent Superintendent, Dr. Gundry, has long since abolished restraint, and where there are at present 430 inmates, with an average of from 350 to 400, for five years, has had but one suicide in ten years. It may here be said in respect to nationality that negroes, in spite of their hopelessly inferior social position, and who seem condemned to servitude, if not hard labor all their days, seldom destroy themselves.

It is the testimony of numerous observers—Quetelet, Tissot, Winslow-Hawkins, Gundry—French, English and American, that suicide is more common north than south, and more common in warm than in the colder months. Of the warmer months, the months of April, May, and June certainly predispose to or excite to suicide.

The fact that more cases of the so-called *neurasthenia* occur in the spring months, than at any other time of the year, must be evident to every general practitioner or specialist who has to do with the class in which these cases arise. Those students who habitually omit to take arm exercise, furnish a large contingent. I have seldom seen a case of neurasthenia in a man who kept reasonable hours, avoided excess of stimulants, narcotics, or sexual indulgence, and who took some form of regular arm exercise.

Such a man will become so fatigued when he enters the confines of mental overwork as to be incapable of it. We find those who are ill-balanced morally, by far the most sensitive to influences that the normal man easily withstands.

The Elmira Reformatory, of New York, with its

1000 inmates between the ages of eighteen and thirty—all criminals—is a fruitful field of observation of nervous instability, and I cannot improve upon the remarks of Dr. H. D. Wey, who has kindly replied to my inquiries as follows:

"It is a well-known fact that 'nerve storms' or ascending nerve currents are encountered every spring. There is no fixed time for their appearance, although they usually manifest themselves either in February or March. This year they appeared in the latter part of January. Whether there is any connection between their early manifestation and the unusually forward spring, I cannot positively say; but reasoning inferentially, it would seem as if there was.

"The old saying runs, that 'In the spring of the year the necks of the bucks begin to swell.' It is very seldom that our annual attack of 'cussedness' comes on as late as the month of April. It seems to occur coincident with the renewal of life in the vegetable kingdom and has never been noted in any degree during the decline of vegetation in the fall. It manifests itself in irascibility, and a disposition to break in upon and infringe the rules of discipline. The animal nature seems to come to the front. Two men may be working quietly side by side, when without any provocation, one man will fell the other to the ground, possibly inflicting serious injury.

"Assaults upon officers are more common than at any other season. In 1880, there were two suicides and two homicides, all within a period of two months. There seemed to be no other reason for the tragedies than that they were the outcome of the nerve tension incident to the season of spring. At this time it is necessary to observe unusual vigilance. None recognize this fact better than old officers. School-work seems to drag, and it calls for unusual effort for the men to apply themselves to their mental tasks. Shop-task work is performed with greater difficulty and frauds in its execution are constantly cropping out. Such, in brief, are the phenomena noted in general. In the individual can be studied the conflict going on between two natures; a Dr.-Jekyll-and-Mr.-Hyde contest, in miniature.

"In everyday life, *Monday* morning is the most troublesome period of the *week*. The quietude of Sunday, the absence of customary duties, and the communing of each man with himself seem to bring to the surface on the following day all that has been held back and repressed during the week. In view of this it is sought to impose upon each man as much Sunday occupation as is consistent with the day, religious services for all denominations, Protestant, Romish, and Hebrew, examinations in English literature for the most advanced, popular talks and lectures by the best talent we can obtain. All that is emotional or that appeals simply to sentimentality is avoided, and for this we have been criticised as Godless.

"Regarding insanity, I cannot say I have noted its presence to a greater degree in the spring than at any other season of the year. When it does occur in the spring it would seem as if it must be looked upon as the giving away of a mind that is non-resistive, and unable to participate in the strain to which the nervous system is being subjected. I have noted that with a rising barometer the men are buoyant and elastic, and perform their tasks without seeming effort and irritation; but when it is falling or depressed, they seem sluggish and heavy, and respond badly or slowly to stimulation.

"I omitted to mention that during the spring 'climacteric' the proddings of sexual disturbance are apparent. Many of the men will have sexual sprees (masturbation) that bring them to a conditon resembling that of the 'fretful porcupine,' when they are in a condition to cast their quills at any one who may provoke or cross them. These sprees may be compared to the outbreaks of the paroxysmal drinker who carries his excesses to a point where the nervous system gives way under the strain and fails to assist him in his dissipation. A man will masturbate to that point where he is in a tremor, unable to eat or sleep, and on the border-land between sanity and insanity. Then we will have to take him in hand, and build him up as would be necessary in the case of a man recovering from an attack of alcoholism. These cases are, however, occurring at all seasons of the year."

If then we have shown that neurasthenia and suicide are more frequent in certain months of the year in various countries than in other months, when *á priori* they should be more frequent, shall we then conclude that temperature or its variation has anything to do with it? We are compelled to say that we do not think it has of itself much to do with the outbreaks or epidemics which we often see at this time. Moreover, we must further say that we believe no one knows what these influences are which disturb the equilibrium of the emotional nature. All we have been able to do is to call attention to the fact that climate and season do have a marked influence upon the manifestation of nervous activity in the various ways already indicated.

A CASE OF PERIOSTITIS, FOLLOWED BY OSTEO-MYELITIS, PYÆMIA, AND DEATH.

BY C. M. HAY, M.D.,

ASSISTANT PHYSICIAN TO THE STATE INSANE ASYLUM, MORRISTOWN, N. J.

THE following case seems to me to present several interesting and unusual features:

P. D., aged forty-five, laborer and soldier, with no history or evidence of syphilis or tuberculosis, was in good physical condition until November, 1888, during which month he sustained a slight contusion of the left tibia, about the juncture of its middle and upper third. The nature of the injury was a contusion, and the skin was only slightly broken, if at all. This resulted in an indurative periostitis, which slowly progressed until about three inches of the periosteum were involved in the process, and there was considerable infiltration of the surrounding tissues. Under treatment this inflammation partially subsided, but continued as a chronic condition, with some swelling and tenderness. It was at this time that I first saw the man, and since then the case was under my care in the hospital wards of this institution.

At this time the patient complained of pain through the limb, and the temperature and general condition of the patient indicated the formation of pus, so that, on December 27th, a free incision was made through the thickened periosteum, the deep layers of which had broken down into pus, while there was also superficial necrosis of the bone, which, at one point, extended deeply into the bone itself, and was connected with its medulla by a sinus. The medulla was then freely laid open, a small quantity of pus evacuated, and the wound packed.

In five weeks complete granulation and cicatrization of the wound had occurred, and the patient was apparently well. He continued well for about one week, when he began to have fever of from 100° to 102° F. at night for three nights.

On February 13th, the patient suddenly had a severe chill, followed by a temperature of 106° F., and an abscess suddenly appeared at the left elbow, and rapidly increased in size. Examination at this time revealed a normal condition of the heart, lungs, and kidneys, while the liver and spleen were not enlarged. The abscess was evacuated of about eight fluid-ounces of greenish, purulent pus, antisepticized, and drained. On the 16th phlegmasia dolens of the right leg occurred, a clot being plainly felt in the femoral vein. The temperature continued typical of acute pyæmia, with abrupt and extreme fluctuations, frequent chills and sweatings, a dry, brown-coated tongue, and adynamic nervous symptoms. The patient continued to sink lower into this typhoid condition, and it was thought he would soon die.

Under the free administration of brandy, quinine, turpentine, and digitalis he continued in the same condition, with high, irregular temperature, and quick, small, wavy pulse, with occasional chills and sweatings, until the 21st, when he began slowly to improve, and on the 24th the œdema had very much decreased in the right leg, and the abscess of the left elbow was rapidly healing. The patient's appetite had improved, while the fever was lower and more regular, ranging from 99° to 102°, with occasional subnormal falls. He continued in this condition until March 4th, when he began to have more fever, and to fail more rapidly in strength.

On March 6th phlegmasia dolens of the left leg occurred. The patient suddenly complained of agonizing pain in the left thigh, and in a few minutes the left leg became almost black in color, while a clot could be felt in the vein. Œdema of the member occurred in a few hours, and soon became extreme. The temperature became higher, and traces of albumin were found in the urine. Examination of the lungs revealed signs of consolidation at both bases posteriorly, while the respiration was markedly increased in frequency. The heart-sounds were rapid and confused, with great weakness of the first sound. On March 11th a small abscess formed in the subcutaneous cellular tissue near the seat of operation. This was opened and drained. On the 16th a large amount of pus (fully two pints) was evacuated from the right thigh just below Poupart's ligament, and the abscess was dressed antiseptically, with drainage. The patient again improved somewhat until March 20th, when all his symptoms increased in gravity; fluctuating tumors appeared in both iliac regions, and the perineum and scrotum became œdematous. The urine became more albuminous; new patches of pneumonia occurred; the heart-sounds became more rapid and more irregular; respiration varied from 30 to 50 in the minute, while the temperature ranged from 96½° to 105½°, and the patient died on March 29th, after some days of low, muttering delirium, with carphologia, subsultus tendinum, and extreme nervous symptoms.

Post-mortem examination ten hours after death. The body was emaciated, and there was œdema of both ankles; the left leg was more œdematous than the right. The brain presented no special lesions, and contained no abscesses. The heart was of normal size and appearance, but, on section, the muscular substance was friable, and very pale in color There was no valvular disease, and the cavities did not appear to be dilated.

The lungs were the seat of numerous scattered patches of pneumonia. These were more numerous in the right lung than in the left, but the lower lobes posteriorly of both lungs were extensively infiltrated. The apices of both lungs were free, and, elsewhere than immediately surrounding each of these patches of consolidation the lungs were anæmic. In the right lower lobe, these pyæmic patches were older than elsewhere, and numerous small abscesses, varying in size from the head of a pin to one and a quarter inches in diameter remained. Fewer abscesses were found in the left lung, where the patches were also numerous, and seemed of recent occurrence.

The liver was symmetrically enlarged, and pale; capsule not adherent; contained no abscesses. The substance was friable, and there were numerous ashen-white patches disseminated through the substance of the organ, giving it a mottled appearance. These patches were from one to three inches in diameter, and were of various shapes.

The kidneys were enlarged; capsule not adherent, cortex not diminished. They showed the same ashen-white patches as were seen in the liver. The spleen was enlarged, capsules presented signs of recent peri-splenitis, while the interior of the organ was simply a pus cavity. The contents were liquid, of a greenish-black color, and gangrenous odor. The condition suggested multiple abscesses which had coalesced.

No gross lesions of the stomach, intestines, or pancreas were found. The arteries were healthy, as far as examined. They were in a state of contraction, and contained long fibrous coagula.

A small abscess was found on the left leg, posteriorly, and contained one fluid-ounce of purulent pus. On section, the abscess in the right thigh (which had been opened below Poupart's ligament) showed that it was very extensive, extending internally deeply under the abductor muscles, and externally beneath the deep fascia, while the femoral artery and vein, and profunda femoris, with their branches, ran free through the abscess. Instead of any reparative process, actual sloughing had occurred. From this abscess a sinus, formed between the femoral artery and vein, and posterior to both, communicated with the abscess in the iliac fossa, and this latter was found to be connected with centres of suppuration in the psoas and lumbar regions.

The veins, as we should expect, presented the most marked lesions. The superficial veins of the lower portion of the abdomen and both thighs were distended to three or four times their natural size, and formed a rich, varicose anastomosis here, and also, to a less extent, over the thorax and neck. This network of greatly distended veins contrasted

markedly with the blanched surface of the skin. The condition of the deep veins was as follows:

The right internal jugular was almost completely occluded by firm coagula, which adhered to one side of the vessel, for the distance of three inches. During that extent the vessel was greatly thickened. At the juncture of the right internal jugular and the right subclavian veins, behind one of the valves, was found a very firm thrombus. There was, however, no distinct change in the wall of the vessel at this point. Coagula, which were unusually firm, were also found in the left internal jugular and left subclavian, innominate, transverse veins, and the superior vena cava. These communicated with a similar coagulum in the right auricle, and probably occurred with death, while the one found in the internal jugular seemed to be the result of previous phlebitis. The principal lesions were in the inferior vena cava and the veins of the lower extremities.

The following veins were chiefly affected: The inferior vena cava, from the juncture of the iliacs to its juncture with the left renal vein; both common and external iliacs, and both femoral veins, with their main branches, down as far as examined below the knee. The lesions were essentially of the same nature throughout, only differing in degree. These consisted of thrombosis, partial organization of the clot, with its subsequent softening, formation of pus, with thickening of the walls and resultant ulceration of the affected veins. The right femoral vein, as it ran through the abscess below Poupart's ligament, had been converted into a fibrous cord, and the organization of the thrombus here appeared complete. The right external iliac was filled with pus and broken-down fibrinous shreds, while an opening half an inch in diameter, involving one-third of the circumference of the vein, communicated with the iliac and psoas abscesses. The right common iliac, and the inferior vena cava presented signs of acute phlebitis, and were filled with purulent pus, the line of the vessels being one ulcerating surface, while the walls of both were three or four times thicker than normal. The left external iliac vein was the seat of pyo-phlebitis, the vein being enormously distended to many times its original size, but the vessel wall was intact. The left femoral vein was thrombosed to below the knee, but softening had occurred only at a few points, and the lining of the vein was not inflamed. There was no formation of pus in any of the tissues outside the veins in the left iliac region, thigh or leg.

Longitudinal section through the left tibia showed purulent osteo-myelitis of the bone above and below the seat of operation, while at the seat of operation itself the medullary canal was filled with new bone, and for a distance of four inches the bone was perfectly healthy. There was also some serous effusion in both knee-joints, but they were not inflamed. The inguinal lymphatic glands were much enlarged on both sides, but suppuration had not occurred in or about them.

Microscopic examination of the light-colored patches in the liver and kidneys revealed amyloid degeneration, while in the latter organ the signs of acute parenchymatous nephritis were evident. Section of some of the smaller pyæmic patches showed the ordinary appearance of pneumonic consolidation, to which, however, were added capillary hemorrhages. Transverse section through one of the inflamed veins gave the ordinary appearance of acute suppurative phlebitis. The thickening of the left femoral vein, just below Poupart's ligament, was remarkable, the wall of the vein being over a quarter of an inch thick. Microscopically it was infiltrated with leucocytes, the principal thickening being in the adventitia of the vessel. The intima was entirely gone, and ordinary granulation tissue surrounded the lumen of the vessel itself. The interior was filled with pus cells, compound granule cells, shreds of fibrine, and granular matter, mixed with the coloring matter of the blood.

The above case seems of great interest in many respects. The slight nature of the traumatism, which apparently was the primary cause of all the subsequent symptoms, certainly points very clearly to the necessity of prompt treatment in all such cases. My chief reason, however, for reporting this case is the fact that acute pyæmia occurred after complete closure of the wound, and after the man had apparently recovered his usual health. The post-mortem sections of the affected bone conclusively proved that that part of the bone upon which the operation had been performed had been entirely repaired, and at the same time revealed new foci of suppurative osteo-myelitis above and below that portion of the bone. Whether these were the remains of the primary inflammation it is hard to say; that they existed at the time of operation seems improbable, on account of the rapid and complete closure of the wound and the recovery of the patient. It would certainly appear that these foci began with the subsequent evening fever, and that they were the initial lesions from which the abscess at the left elbow originated. The violent onset of the disease in its most acute type makes it probable that at this time the spleen was also the seat of pyæmic lesions, and the absence of any lung implication strengthens this view.

The manner in which the collateral circulation was established for the lower extremities, and its efficiency for such a long period of time, are worthy of note, while the very extensive secondary inflammations, which must have existed for weeks prior to death, also add interest to the case.

The sequence of events in this patient's case seems plain, provided we assume that the blood became primarily affected from the purulent osteo-myelitis, which in some manner occurred in the tibia after the closure of the wound. The condition of the spleen, as has been said, would indicate that it was next affected, and the widespread thrombosis and embolism (as evidenced by the condition of the lungs and spleen and the successive attacks of phlegmasia

dolens) seemed to have been the primary condition in the various situations in which they occurred, while the phlebitis was undoubtedly secondary. This was very clearly indicated by the acute attacks of phlegmasia dolens, with the subsequent formation of abscess in those situations, and also by the fact that many large veins with healthy walls were found thrombosed at the autopsy. The occurrence of phlegmasia of the left lower extremity exhibited this most markedly. Thrombosis attended by pain, cyanosis, and gradual œdema of the member occurred on March 6th, but it was not until March 20th that the condition of pyo-phlebitis of the left external iliac vein made itself manifest as a fluctuating tumor.

The recovery from the acute symptoms, and the continuance of the case as one of chronic pyæmia for such a long period of time, together with the late occurrence of septic pneumonia, justified the hope for a while of the patient's ultimate recovery, which was however speedily dismissed by the occurrence of the secondary complications already enumerated. It seemed surprising that ulcerative endocarditis did not occur in the case, when we consider the condition of the inferior vena cava itself.

In connection with the veins, I neglected to state that both the vena azygos, superior and inferior, with the intercostal and lumbar veins, were found greatly dilated.

In conclusion, my thanks and indebtedness are due to Dr. Gilbert B. Pfoutz, pathologist at this institution, for valuable aid in the microscopic study of this case.

THE PINE BELT OF NEW JERSEY—A REGION OF SANDY SOIL AND PINE FORESTS.[1]

BY ISAAC HULL PLATT, M.D.,
OF LAKEWOOD, N. J.

NEW JERSEY, though a small State, presents a diversity in its topographical and geological features. In the northern portion it is traversed by the Kittatiny and Highland ranges of hills, parts of the great Appalachian chain; the central portion is characterized by red sandstone with trap ledges, while the southern and eastern part of the State consists of level country, with a sandy soil and pine forests. Along the shore there are long stretches of shallow bays and tide marshes, and in the extreme southern portion many little rivers with wet meadows lying along their banks, but running through the interior of the State there is a strip of land about sixty miles in length and from eight to twenty miles in breadth, reaching from a few miles south of Freehold, in Monmouth County, almost to Vineland, in Cumberland County. This comprises the inland portion of the sandy tract, excluding the extreme southern portion, of which I have spoken as being damp. This region has long enjoyed a local reputation for healthfulness, and some portions have been mainly settled by people who have sought it for that reason. Its soil varies somewhat in its character, ranging from a light sandy loam to clear beach sand. Its streams, which are sufficient for drainage, have good banks which they very rarely, if ever, overflow, and there is no wet meadow. There are a few peat bogs which have been partially utilized in the cranberry culture, and also some marl beds in the northern portion, and occasionally a cedar swamp, but these features are all of very limited extent. Leaving these out of account the richest soil is a light sandy porous loam, containing about 85 per cent. of silica and only 1½ per cent. of water, while the lightest is almost pure quartz sand, 95 per cent. silica and only 0.6 per cent water.[1] Extensive pine forests are a prominent feature of this region. They have been in some places cut off or burned, and in some spots are replaced by oak and other deciduous trees, but there are enough left to make it pre-eminently a pine region. One consequence of the sandy nature of the soil is the entire absence of mud. Of course, during a rain or a thaw there is wet sand, but it is no more like mud than the wet sand of a sea beach, and within a few hours after the cessation of the rain it is dry again. Melting snow does not produce slush, except in rare cases where the snow has immediately followed a freezing rain, as the dry and thirsty soil drinks up the water as fast as the melting of the snow can produce it. I have seen eight inches of snow disappear so completely in twenty-four hours that one could walk out, "across lots," with thin shoes without moistening the feet. Owing to the coarseness of the sand there is no dust, except a slight amount in very dry weather where the roads have been covered with clay or gravel.

The importance of soil dryness as a climatic element in the prophylaxis of phthisis is too well known to need rehearsal. The researches of the elder Bowditch, Buchanan, Simon, Pepper, and others are familiar. Why soil dampness should have an influence in the production of phthisis, so out of proportion to dampness emanating from other sources, I have never seen satisfactorily explained, and it is not my purpose to attempt its explanation, but I think some figures from the vital statistics of New Jersey will help confirm the fact if any confirmation is needed.

The tract which I have described, comprising parts of the counties of Monmouth, Ocean, Burlington, Camden, and Atlantic, is coëxtensive with the townships of Howell, Jackson, Manchester, Southampton, Woodland, Shamong, Winslow, and Ham-

[1] Read before the American Climatological Association, June 24, 1888.

[1] Cook's Geology of New Jersey.

monton. In all, about 570 square miles, containing a population, according to the State census of 1885, of 14,475. According to the reports of the State Board of Health, which are carefully prepared and I believe as accurate as any statistics of the kind, the whole number of deaths in these eight townships during the six years from 1883 to 1888, inclusive, was 1057, or an average of 12.16 per thousand, a year. The number of deaths from consumption was 141, or 1.6 per thousand, a year. In the State of New Jersey, during the same period, the total mortality was 18.65 per thousand, and the mortality from consumption 2.53 per thousand, or, throwing out towns of over five thousand inhabitants, the total mortality was 15.07 per thousand, and the mortality from consumption 2.12.

	Total mortality per thousand.	Mortality from consumption per thousand.
Sandy tract	12.16	1 60
N. J. State	18 65	2.53
N. J., excluding cities	15.07	2.12

The comparatively low mortality from consumption will be rendered more striking if attention is called to the nature of the population of the region. The inhabitants may nearly all be included in two classes: the descendants of the original settlers and those who have sought this region because of its supposed healthfulness. Probably owing to the sterility of the soil, the native south Jerseyman is very poor; he resembles in many respects the poor whites of the southern States. He can in many cases neither read nor write. His surroundings are as unhygienic as poverty, ignorance, and lack of ambition can readily make them in a naturally healthy region. His home is a hovel and his food indigestible, and often insufficient and innutritious. Of course, there are exceptions, but this is the rule. Both this class and that composed of people who have come because they were in feeble health would naturally be supposed to raise the death-rate from phthisis.

The comparison with the rest of the State of New Jersey I regard as of greater importance than that with any place else, because the statistics are compiled under the same general direction and under the same rules and conditions; but it will, perhaps, be interesting to cite for comparison a few other death-rates from phthisis:

New York City	3.56
Philadelphia	3.16
Brooklyn	2.98
Boston	3.34
San Francisco	3.06
Massachusetts	2.90
New York State	2.50
London	3.20
Rural England	2.30
Switzerland	1.80
Rural Victoria (Australia)	0.87

It is to be regretted that no systematic meteorological observations have been made in this region. The nearest approach is the record of Vineland,[1] just south of the region described and in quite similar country. This for ten years from 1878 to 1888 is as follows:

Barometer, reduced to 32°,	
Mean	29.92
Maximum	30.76
Minimum	28.65
Thermometer,	
Mean	53.60°
Maximum	104.00
Minimum	—10.00
Mean relative humidity	72.2
Rainfall per annum,	
Mean	47.41
Maximum	59.99
Cloudy days, average	107.00

There is nothing very striking in this table; the mean relative humidity is moderate, therefore the climate cannot be classed as very dry. In spite, however, of the fact that by the tables the humidity does not differ materially from that of New York or Boston, the sensation of dampness is far less. In winter, the peculiarly disagreeable weather accompanying an east wind in our seaboard cities, and known as "raw," is almost unknown, and in summer, while the weather is frequently warm it is rarely sultry. The east wind even in winter loses its disagreeable character which makes it a bane to the Bostonian and New Yorker, and in warm weather is the pleasantest wind we have, coming as it does with the freshness and coolness of the sea, but deprived of its dampness by the stretch of sand and pine forest over which it has passed. Fogs are very rare. In a three years' residence at Lakewood I have not seen more than five or six, and these were dissipated a few hours after sunrise.

The village of Lakewood lies near the western border of the township of Brick in Ocean County, ten miles from the sea. It is not included in the region to which the statistics given above apply, because it is part of a statistical division extending to the seashore, and also because a large proportion of the deaths there are of patients from a distance. It is, however, practically a part of the region described, being within a mile of its border and identical with it in soil and climate, and is the only place thereabout where good accommodations can be found for sojourners. The elevation of the village above the sea level is from sixty to a hundred feet, it being situated on the southern slope of a low ridge which forms a shelter from the northerly and northwesterly winds.

[1] Vineland is almost identical in its physical features to the region under consideration. The reason of its exclusion is the existence of a strip of damp soil between.

On the north and west the village streets terminate in the pine woods which, with an occasional clearing for farming purposes, extend several miles northward and indefinitely to the west. To the south and east the country is more open, but a large portion is still covered with pines. The town is furnished with water from the Metedeconk River, which flows just to the south, and is supplied with a good system of drainage.

There is one feature of Lakewood which has not yet received the attention due it, and in fact the existence of which I have only recently become aware, and that is, a very remarkable spring about a mile from the village. It is of the class of the Poland and Bethesda springs, and has an estimated flow of from sixty to ninety gallons per minute. The following is its analysis:

Total solids . . .	grs. per gallon,		1.0260
Silica	"	"	0.2098
Sodium chloride . .	"	"	0.4431
Ferrous sulphate . .	"	"	0.1107
Calcium sulphate .	"	"	0.0495
Calcium chloride .	"	"	0.0058
Potassium chloride .	"	"	0 0220
Magnesium chloride .	"	"	0.0547
Mineral residue . .	"	"	0.8956
Organic and volatile matter	"	"	0.1304

The analysis of the Poland spring I will give here for comparison:

Total solids . . .	grs. per gallon,		3.6759
Sulphate of potassium	"	"	0.1562
Chloride of sodium .	"	"	0.2636
Carbonate of sodium .	"	"	0.1333
Carbonate of lime .	"	"	1.2287
Carbonate of magnesium	"	"	0.5412
Oxide of iron and aluminum	"	"	traces
Silica	"	"	1.1197
Organic and volatile matter	"	"	0.2332

It will be seen that in the quality of purity the Lakewood spring excels the Poland spring by more than three times. Accepting the views of the profession as to the value of pure spring water in the treatment of Bright's disease, as epitomized by Dr. Andrew H. Smith in his paper read before the Climatological Association last year, and in view of the undoubted benefit of the water from the Poland and other similar springs in these cases, the value of this spring can hardly be doubted. I have not yet had an opportunity to put this theroretical opinion to a clinical test, but I shall do so as soon as possible, and in view of the exceedingly clear course of reasoning by which Dr. Smith reaches his conclusions in the paper referred to, and of experience with water of similar springs I have little doubt of the result.

It is not my intention to enter into any comparison of this region with more famous health resorts. I certainly believe that the high altitude of the Engadine or Colorado has positive advantages which places near the sea level cannot possess; but there is a long list of contra-indications to the high altitude treatment, and there are many patients who cannot avail themselves of it for various reasons. To such our region offers a refuge with the very decided advantages of an exceedingly dry, porous soil, the environment of pine forest, good accommodation and easy accessibility from the great centres of population. It is most admirably situated for carrying out the idea advanced by Dr. Bowditch at our meeting last year, of residence in comparatively favorable regions near at home, where sanitaria might be established, and climatic, medical, and hygienic treatment combined without the necessity of a distant exile.

As some future time I hope to be able to give something more definite in regard to the results of treatment in this region, but as yet my observations are not sufficiently extensive or long continued. I can only say at present that it is very exceptional for a patient with bronchial or pulmonary disease not to derive some benefit greater or less from the change, and in many cases the benefit has seemed remarkable.

MEDICAL PROGRESS.

Biborate of Soda in Epilepsy.—The objections to a long-continued use of the bromides in epilepsy are well known. Substitutes are eagerly sought after. Of the biborate of soda for this purpose, DR. J. D. MUNSON, Medical Superintendent of the Northern Michigan Asylum, in his last report, which we quote from the *American Lancet* for July, says:

"It has been found quite equal to the bromides in controlling the seizures. In some cases it has been found superior. It is prompt in its action, and does not affect badly the general condition, and is usually well borne after the first few doses.

"Biborate of soda tends to constrict the peripheral bloodvessels in a remarkable manner, and to this action is doubtless due its beneficial action in epilepsy. In epileptics with high arterial tension, borax is sometimes harmful, while in those with low arterial tension, but strong heart action, it is most apt to be useful."

In cases with weak heart it acts badly, probably by its vaso-motor action, obstructing still more the outward blood. Among the drawbacks to its use, he gives the following:

"Given regularly in moderate doses it is apt to affect the nutrition of the scalp, the hair becoming rough and brittle, and in one or two cases alopecia has followed. A troublesome psoriasis is occasionally induced, which, according to our experience, has not yielded readily to treatment, nor has the administration of Fowler's solution with it always prevented its appearance. In one case a suppurative inflammation of the middle ear was always induced by the use of the biborate."

He advises that the drug be never given before meals, or for long periods continuously. It is well sometimes to alternate its administration with those of the bromides.

Nephrectomy in Case of a Horseshoe Kidney.—SOCIN, of Bâle, performed an exploratory operation last year on a woman, aged forty-seven, who had been subject for thirty years to pains in the right hypochondrium, where a tumor had gradually formed. He aspirated, and found that the swelling contained urine; then he performed nephrotomy. Hydronephrosis was discovered during the operation. The urine passed by the urethra remained normal, but on and after the fourth day an abundance of turbid urine drained from the opening made in the kidney, and an examination led to the conclusion that parenchymatous nephritis and purulent pyelitis were present. On May 12th nephrectomy was attempted. After an abdominal incision and successful ligature of the structures in the hilum, it appeared that nothing was left to do besides setting free the lower part of the diseased kidney. On careful manipulation this extremity was found to be continuous with a bridge of renal tissue, which passed over the aorta and vena cava and joined the lower part of the left kidney. This bridge or isthmus was found to be but loosely connected with the great vessels. Dr. Socin divided it by means of the thermo-cautery, so that the right side of the horseshoe kidney came away. Five ligatures were applied to bleeding points on the raw surface left behind, which was then covered over by the capsule, the edges of the latter being united by sutures. An abdomino-lumbar drain was applied. The patient was in excellent health four months after the operation. In Braun's (Heidelberg) similar case a horseshoe kidney was discovered at operation for the removal of a pyonephrosis. The isthmus adhered strongly to the vena cava; on attempting to separate them, profuse venous hemorrhage occurred, which was controlled with difficulty. The patient sank from exhaustion at the end of the operation.—*British Med. Journal*, July 13, 1889.

Treatment of Spasmodic Croup.—The treatment indicated in spasmodic croup is, first to overcome the suffocation, and later to abort the paroxysms. The *Revue général de Clinique et de Thérapeutique*, of June 13th, suggests the following treatment:

1. Before or during the paroxysm an emetic should be given; this will facilitate the removal of the mucus in the throat.

2. Mild cutaneous counter-irritants should be used; such as hot-water fomentations applied to the throat. Hot baths are frequently of considerable value.

3. After the paroxysm a dessertspoonful of the following prescription should be administered every half hour:

℞.—Oxysulphuret of antimony, grs. ¾ to 1½.
Spirits of aconite root } āā gtts. v. to x.
Tincture of belladonna }
Syrup of orange flowers . f℥j.
Distilled Linden flower water f℥jv.—M.

Disinfection of Springs, and Number of Germs in Groundwater.—DR. CARL FRÄNKEL, in the *Zeitschrift f. Hygiene*, reports a series of experiments made by him to determine some points of practical importance, namely, What are the relative values of tube wells and pot wells, and can they be disinfected by the measure usually recommended?

With regard to tube wells, from their mode of construction they are not liable to contamination from surface impurities, as the pot wells are, and it becomes of the greatest consequence to know whether they receive infective microörganisms from more distant sources. The result of these experiments is that, as a rule, the water entering tube wells is absolutely free from microorganisms. But it still appears that a growth of microörganisms takes place in the tube wells, and a consideration of all the circumstances points to the growth of a pellicle of microörganisms clinging to the sides of the tube. Hence, one way of disinfecting the tube wells is to brush them clear, and then completely pump off the turbid liquid. In cases where this proceeding proves inadequate, a concentrated solution of carbolic acid and sulphuric acid dropped into the tube, and left for a day or two, will complete the disinfection. Disinfection of these wells by lime is quite unsuitable, as it forms a mortar, and seriously interferes with the entrance of water.

The ordinary pot well, on the other hand, is incapable of disinfection, and Dr. Fränkel agrees with Plagge that it is a hygienic monstrosity. Considering how common pot wells are in our country districts, these are results which require careful attention.

The tube wells, which Dr. Fränkel found to furnish water freer from germs, were sunk in a part of Berlin which, at first sight, would seem to expose them to great risk of infection. In reality, however, after a time, a thick pellicle forms in old soils, which effectually precludes the passage of germs beyond a certain depth. Two sources of error have here to be guarded against. In the first place, the pellicle or its equivalent, which prevents the passage of germs downward, may be broken through at some point, or the corresponding ground may be constituted in parts of pebbles or gravel, which allows of the transmission of microörganisms; and, in the second place, the chemical constitution of the water passing away from these old soils will very likely be such as to lead to a free growth of microörganisms, as was the case in these experiments. It is practically impossible to exclude all access of microörganisms to the well.

The chief conclusions to be drawn from Dr. Fränkel's experiments are, that Abyssinian or tube wells are infinitely preferable to the ordinary pot well, and that a disinfection of the tube in the manner indicated above is, as a rule, all that is necessary to make the water quite free from microörganisms.—*The Medical Chronicle*, July, 1889.

Creolin-eczema.—Encouraged by the universal praise and reported innocuousness of creolin, DR. J. WACKEZ, of Munich, used the drug as a dressing for wounds in children. In seventeen cases of minor wounds in which he used creolin gauze as a dressing, ten healed by first intention; the remaining seven, however, developed an eczematous rash in the neighborhood of the wound, which closely resembled the rash of scarlet fever, and which occasioned severe itching. On the third day the skin became raised by numerous blisters, some of which were as large as a dollar. These blisters were filled with a clear liquid. The temperature of the skin was high, the neighboring lymphatics enlarged; the general condition of the patient was also considerably affected, there being loss of appetite, headache, and in some cases even vomiting. After the blisters had dried up, large

lamellæ of the epidermis were shed; in one case the entire surface of the palm of the hand and the volar surface of the fourth finger, which gave the hand the appearance of a burn. In all the cases creolin (Pearson's) had been used in solution 1 to 1000, the application being made with gauze soaked in the solution.

Dr. Wackez made further experiments with the drug on a boy, both hands of whom had been injured, and found that the hand dressed with creolin gauze developed similar eczema as observed in the other cases, whilst the opposite hand, which had been dressed with carbolized gauze, healed rapidly, without any unpleasant symptoms.—*Therap. Monatsh.*, June, 1889.

Lotion for Pityriasis.—DR. HILLAIRET and ZAUCHER, in *L'Union Médical*, of June 18th, give the following potion, claiming it to be of special value in cases of pityriasis alba:

℞.—Hydrate of chloral . . 3 parts.
Glycerine } . . āā 25 "
Alcohol }
Water . . . . . 100 " —M.

Sig.—Apply as a lotion to the affected parts, at first daily, later every two days, and then once a week. Its use should be decreased according to the improvement. When the disease is of an eczematous type, vapor baths or local hot-water sprays will be found useful.

Laminaria in Stricture of the Œsophagus.—We read in the *British Medical Journal*, of June 22d, that PROFESSOR SENATOR has recently stated that for about a year past he has used laminaria in stricture of the gullet with comparatively good results. A piece of laminaria is attached to the end of an ordinary œsophageal bougie, and for greater safety this is further connected with a string running through the whole length of the bougie. Different sizes are used according to circumstances. The instrument is passed into the stricture and left in position from half an hour to an hour, during which time the laminaria swells to a considerable extent. In one case it expanded from one to one and a half millimetres in the course of half an hour. The surface of the laminaria remains smooth, and does not injure the mucous membrane. In most of the cases in which Dr. Senator has tried this plan the stricture has been cancerous, and, as he says, although "by gradual and frequently repeated pressure a carcinoma may cicatrize and become atrophied, this very seldom happens." In a large proportion of his cases, however, the treatment produced very marked dilatation of the stricture, so that the patients after a certain time could swallow much better than before. In some instances there was no improvement, and Professor Senator confesses that at first his anxiety to dilate the stricture as quickly as possible made him apply the treatment without sufficient regard for the tolerance of the diseased parts. If due care is not exercised, the laminaria may swell so much as to cause great pain, and even difficulty in removal. The most favorable cases for the treatment are, of course, those of cicatricial stricture. Dr. Senator points out that laminaria may also be used with good effect in narrowing of other canals, and he relates one case of stricture of the rectum in which he tried it, but apparently with in different success.

Stomachic Mixture.—The *Revue de Thér. Méd.-Chir.*, June 1, 1889, gives the following stomachic mixture:

℞.—Compound tincture of cardamom . . . .
Tincture of vanilla . .
Tincture of absinthe . .
Tincture of canella . .
Tincture of ginger . .
Tincture of quassia . .
Tincture of calumbo . } āā ℥ijss.—M.

Sig.—Twenty-five drops before meals.

Hydracetin and Psoriasis.—Pure hydracetin, or, more correctly, acetyl-phenyl-hydracetin, is a white, crystalline powder, both tasteless and odorless. It dissolves but slightly in water, but is easily soluble in alcohol in proportions of 1 to 50. DR. GUTTMAN has noted its active therapeutic properties in psoriasis. In one case seven applications of a 10 per cent. ointment of hydracetin cured a case of severe psoriasis of the back; and in another case complete recovery resulted within a week. In neither case was any recurrence of the disease noted. —*Monatsheft f. Prak. Dermat.*, July, 1889.

The Vitality of the Cholera Bacteria in Milk.—Some time ago, the crew of a ship, at Calcutta, became infected with cholera. The infection was traced to the fact that the milk, which had been taken on board at Calcutta had been adulterated with water drawn from a tank which was proved to be infected with cholera excrements. In order to ascertain definitely the vitality of the cholera bacillus in milk, DR. S. KITASATO, of Japan, who is now working in Dr. Koch's laboratory, undertook a series of experiments, the results of which are reported in the *Centralb. für Bakter. und Parasit.*, June 14, 1889.

Unsterilized milk was, soon after being milked, placed in test-tubes and infected from cultures of cholera bacilli. The different tests were kept at various temperatures and subjected to hourly examinations. In all cases the bacilli died as soon as the milk became sour. In the tests which had been kept at a temperature of 97° F., the bacilli died inside of 14 hours, whilst in those kept at a temperature of 46° or 54° F. lived, at the longest, only for three and one-half days. In milk sterilized by boiling in a steam bath for four or five hours, the bacilli lived longer, as the milk kept fresh much longer. At a temperature of 97° F., the milk soured very gradually and the bacilli died in two weeks, the milk at the expiration of that time being found germless. When kept at a temperature not over 71° or 77° F., living cholera bacteria were found in the tests for three weeks.

Kitasato says that he found that if milk be boiled for five minutes in a water bath, its sterilization will be complete.

The Administration of Cod-liver Oil.—For the purpose of agreeably modifying both the odor as well as the taste of cod-liver oil, DR. SEIG, in the *Revue de Thér. Méd.-Chir.*, June 1, 1889, recommends that it be given in the following formula:

℞.—Cod-liver oil . . . . f ℥lxx.
Creasote . . . . . ♏xl.
Saccharin . . . . . grs. ijss.—M.

The odor of this preparation will resemble that of roast meat.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication. When necessary to elucidate the text, illustrations will be furnished without cost to the author. Editor's address, No. 1004 Walnut St., Philadelphia.

SUBSCRIPTION PRICE, INCLUDING POSTAGE,
PER ANNUM, IN ADVANCE . . . . . $5.00.
SINGLE COPIES . . . . . 10 CENTS.

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made, at the risk of the publishers, by forwarding in *registered* letters.

Address, LEA BROTHERS & CO.,
Nos. 706 & 708 SANSOM STREET,
PHILADELPHIA.

SATURDAY, AUGUST 10, 1889.

THE FUNCTION OF DIGESTION IN PULMONARY PHTHISIS.

SYMPTOMS of digestive disturbance are prominent in every stage of phthisis, and sometimes occupy the foreground of the clinical picture. This is so well known that certain writers recommend a careful examination of the lungs in all cases of dyspepsia, especially in young people, and the term "latent dyspeptic phthisis" has been applied by Sée to cases of which the first symptoms are all referred to the digestive organs. In some cases, however, notwithstanding the presence of marked loss of appetite, and other symptoms of digestive disturbance, the functional capacity of the stomach is good, as is proved by the success attendant upon the treatment of this disease by forced alimentation.

Until quite recently there have been no criteria by which to discriminate the cases in which benefit may be expected from this treatment from those in which failure is sure to attend it. In two successive numbers of the *Deutsche medicinische Wochenschrift* (Nos. 14 and 15, 1889) DRS. O. BRIEGER and C. H. HILDEBRAND have published the results of their examinations of the gastric secretions in a number of cases of phthisis, and arrive, in the main, at similar conclusions. They differ somewhat, however, with reference to the causes of the digestive disturbances, Hildebrand referring them almost exclusively to fever, while Brieger simply mentions that, in two cases, hydrochloric acid, which had previously been present in the gastric secretions, disappeared with the onset of fever.

Of the 64 cases examined by Brieger, 31 were severe, with continuous fever; 27 moderate, with more or less fever; and 6 in an early stage without fever. In 16 per cent. of the first group the chemistry of digestion was normal, while in the remainder there was more or less gastric insufficiency; and in 9.6 per cent. there was a complete absence of the normal products of gastric secretion. Of the second group, the secretions were normal in 33 per cent.; in the remainder were more or less abnormal, while in 6.6 per cent. the normal secretions were absent. In the third group, the cases in which the gastric secretions were normal equalled in number those in which they were impaired.

Brieger attributes the digestive disorders of phthisis to chronic glandular gastritis, but brings no decisive anatomical proof to the support of this opinion. In the fatal cases necropsies were performed so long after death that it was impossible to distinguish ante- from post-mortem changes. His opinion that anæmia is the cause of digestive disorders in the earliest stage of phthisis we believe to be destitute of proof. It is only in the high grades of anæmia that digestive disorders can be said to depend directly on the impoverished state of the blood; and in phthisis, even in late stages, the anæmia is surprisingly slight—not to be compared with that of cancer of the stomach or intestine, or with that of pernicious anæmia. In the early stages of phthisis the anæmia is generally trivial.

Hildebrand's opinion, that the indigestion of phthisis is caused by fever, is less open to criticism. In one group of cases—the whole number was forty—hydrochloric acid was always present in the gastric secretions; in a second, it was never present; and in a third it was sometimes present, sometimes absent. These differences were all dependent on the presence or absence of fever. In the first group there was no fever; in the second it was continuous; and in the third it was intermittent. Hildebrand concludes from his experiments, that 100.2° F. is the temperature line at and above which free hydrochloric acid is absent from the gastric secretions.

These observations are, it is reasonable to hope, merely the beginning of more extended researches, not only in phthisis, but also in other chronic diseases. From the facts thereby obtained, the physician may be enabled to substitute for vague suggestions, precise directions with reference to diet, and to

arrange its details, not only with general reference to the disease, but with particular adaptation to the needs of the patient.

SUMMER RECREATION.

A COMPARISON of the present with the comparatively recent past shows a marked change in the habits of the people, particularly of our cities, with respect to summer recreations. The fashion of leaving home for a greater or less period during the summer season has become of very general observance, and is not confined to populated centres, or to the well-to-do or wealthy classes. Those in every avocation in life, from the humblest to the most responsible, expect and take a summer vacation. As a consequence of this popular demand, certain practices have sprung up, such as the early closing of places of business, the Saturday half-holiday, which is legalized in some States, the regular summer vacation to employees, and the increasing number of legal holidays.

The immense facilities for the accommodation of pleasure-seekers scattered all over the country, in the mountains, in the country, and by the seaside, which are being constantly extended, are being taken advantage of by an enormous number of people, coming and going throughout the season. They exist because of the great and ever-increasing popular demand for such accommodations. There are also the excursions by rail, by steamboat, and by steamship across the ocean for travel in foreign countries, which have increased so greatly as to make the summer season the harvest time for railroad and steamship companies. Those too poor to enjoy an outing are provided for liberally by such institutions as the Children's Country Week, fresh air societies, sanitarium associations, and the like.

The rapid increase of population partly explains the great multiplication of places of summer resort. But there is beyond this the fact, patent to every close observer, that a change is taking place in the views and practices of the people. The American people are fast becoming a pleasure-seeking people. The enormous increase and the great distribution of wealth provide for the gratification of this inclination, if they do not create it.

The necessity of relaxation from the intense business activity which characterizes American life arises from the demands of natural laws. Diversion of mind and rest of body recreate and restore exhausted functions, and prevent more permanent disability. The more active, taxing, and prolonged the mental and physical strain, especially if immoderate, the greater the necessity for rest and diversion, if the mental and physical health are to be maintained. The yearning for rest is based upon physiological laws. It is a fundamental feature of the Sabbath, divinely ordained for rest and worship.

The increasing tendency among an active, industrious, and energetic race to relax occasionally their labors, must be looked upon, from a hygienic and social standpoint, as of much advantage to the health and prosperity of the people. It is necessary, however, that the true object of the vacation is not perverted by immoderate indulgences and excesses of whatsoever kind, and that care and good judgment be exercised in selecting a suitable and healthy environment. There is need of caution to the seekers after health and recreation. Quietude and absolute rest of body and mind are the best restoratives to many who are jaded by incessant cares and worry. Others require the stimulus of out-door physical exercise, but it should be judiciously employed. It is a mistake to enter too actively upon a course of unaccustomed exercise. The system when enervated cannot respond to excessive demands, and the overstrain tends to weaken rather than strengthen enfeebled functions.

Excesses committed under the exhilaration of pleasure are to be guarded against as defeating the aim of healthful recreation. The exactions of society, if permitted to sway the coveted vacation, simply transfer the scene without altering the conditions, and depress and exhaust vitality, and render bad worse. The sources of disease often lurk in the shadow of the summer resort. It is therefore very necessary to look critically to the sanitary advantages of the place of sojourn. A healthful environment and a house with correct sanitary appointments are among the most important objects of selection. Wholesome water and safe drainage cannot be dispensed with. The absence of these essentials too often makes the summer experience a most disastrous one.

Immoderate surf-bathing, excessive indulgence at table, and constant encroachment upon the hours allotted to sleep, are violations of hygienic laws which are sure to demand a penalty. The *Lancet's* advice to the professional man, to turn his back upon the throngs of the summer resort and escape its wearying demands, and with few or no companions, except perhaps a faithful dog, seek an un-

frequented path, where diversion is pronounced and satisfying, is sage advice which the experience of many will endorse.

THE PREVENTION OF HOG CHOLERA.

IN another column we present the conclusions reached by the Board of Inquiry, consisting of Drs. E. O. Shakespeare, R. Meade Bolton, and T. J. Burrill, appointed by the U. S. Commissioner of Agriculture to study the causes and prevention of hog cholera and swine plague. This inquiry was wisely instituted by the Department of Agriculture, with the view of obtaining such information as would enable it to restrict the spread of diseases which, according to accurate information, already cause a loss in this country of upward of twenty-millions of dollars every year.

It is a subject for congratulation that such competent men were secured for this difficult investigation, but it is a matter for deep regret that the money at the disposal of the Department was not sufficient to enable the Commission to complete its work. The results already obtained give reason to hope that the threshold of a discovery leading to important practical and economic results has already been crossed.

The Commission finds that the germs of hog cholera and of swine plague have been now clearly described and identified; that disinfection as a means of prevention cannot be made effective under the existing conditions; and that, with our present knowledge, treatment is futile. The real hope for the restriction of the disease probably lies in some form of preventive inoculation, but further investigation is necessary before this can be recommended, since every hog thus treated becomes, for the time being, a new centre of possible infection and, furthermore, inoculation of the living germ seems permanently to stunt the growth of the animal.

The Commission points out the important fact that the chemical products of certain pathogenic germs in artificial cultures possess the same protective power as do the living germs themselves, and their own uncompleted investigations seem to indicate strongly that this is true in reference to the germ of hog cholera. If further investigations confirm this, a safe, harmless, efficient and practical means of preventing hog cholera will have been found.

The objects sought for by this investigation are so important to the agricultural and economic interests of the country and the outlook for the early attainment of valuable results is so encouraging that the work of the Commission should be at once continued and vigorously prosecuted, and we trust that the Department of Agriculture will find ample means for this research at its disposal out of the funds now available from the appropriations for the new fiscal year.

UNDER the will of the late Dr. Alonzo Clark, a scholarship was endowed at the College of Physicians and Surgeons, New York, for the promotion of the discovery of new facts in medical science. This scholarship has an annual income of about nine hundred dollars, and the Faculty of the College have worthily bestowed it for a term of three years upon Dr. T. Mitchell Prudden.

DR. LEWIS A. SAYRE has recently been elected an honorary member of the St. Petersburg Medical Society. Dr. Sayre's many friends will be gratified to learn that he has returned from a trip to the Hot Springs of North Carolina much improved in health.

DR. J. F. HARTIGAN, of Washington, D. C., sailed on the "Belgenland," on July 17th. He is the newly appointed Consul to Trieste, a position which has been described as one of the best of the "travelling scholarships" in the gift of the Government. In some sense this appointment has been regarded as a reward of merit to Dr. Hartigan, his health having been imperiled and impaired during a service done for the Government at Enterprise, Florida, during the epidemic of yellow fever.

DR. OSCAR C. DE WOLF has resigned his position as Commissioner of Health of Chicago after thirteen years of intelligent and faithful service. Dr. Wickersham has been appointed his successor.

THE Ninth Annual Meeting of the Lehigh Valley Medical Association will be held at Glen Summit, Pa., on Friday, August 16, 1889. The President, Dr. G. N. Best, of Rosemont, N. J., will read a paper on "Evolution in the Causation of Disease," and Dr. Francis X. Dercum, of Philadelphia, will give the Annual Address, and he has chosen for his subject, "Railroad Shock and Its Treatment."

MR. JONATHAN HUTCHINSON has just been elected President for the ensuing year of the Royal College of Surgeons of England.

AN alleged physician, calling himself "Dr. F. A. Davis, of Johnstown," having sought to work upon the sympathies of the medical profession of New York City, a notice has been issued by Dr. Bryant, of the Department of Health, that no physician of that name has lived at Johnstown, Pa. The impostor may seek to ply his mean fraud elsewhere and we hope he may be caught and punished to the full extent of the law.

SOCIETY PROCEEDINGS.

THIRD CONGRESS OF THE GERMAN SOCIETY OF GYNECOLOGY.

Held at Freiburg, June 12, 13, and 14, 1889.

(Specially reported for THE MEDICAL NEWS.)

DR. KALTENBACH, of Halle, read a paper on

AUTO-INFECTION.

Two causes, he said, produce puerperal infections having as point of departure the genital apparatus. They are produced directly by microörganisms or by intoxication due to toxic matters produced by these same organisms; the microbes penetrate into the tissues, where they reproduce themselves or produce chemical poisons, which pass into the blood. These two powers, infection and intoxication, rarely present themselves in a pure or characteristic form, for more often the pathogenic germs are multiple and mixed with saprophytes or non-pathogenous microbes. Most puerperal diseases are produced by an infection from without, imported by a person, an instrument, or an apparatus. As sources of infection he mentioned especially the cadaver, septic wounds, the lochiæ of diseased women.

The most frequent forms of puerperal fever were formerly divided into septic peritonitis, diphtheria, diffuse phlegmonous inflammation, phlebitis, pyemia, etc. All these numerous forms are considered to-day as having their origin outside of the organism.

By auto-infection is specially meant the infection which arises from the remains of the fœtal membranes, from the necrosis and mortification of tissue which result from the too long compression of the soft parts by the fœtal head, from the putrefaction of the placenta, etc. The streptococcus is more often found as a promotor of puerperal infection and septic peritonitis. The gonococcus is a well-known infectious agent; but besides these, there exist a number of others which it is difficult for us to differentiate, and we have frequent transition between the saprophytes and pathogenic microbes. On the other hand, according to the experiments of Sheffeck and Döderlein, it is difficult to render the vagina aseptic in normal labor; the best prophylaxis consists in making successive disinfections with solutions of corrosive sublimate 1 : 2000 or 1 : 3000.

Out of 1500 labors observed in his clinic, there were but 2 deaths by contamination and 1 by septicæmia; one of these cases was due to a student who had been in a surgical ward where there existed cases of septic disease. 13 per cent. of his delivered patients have presented an elevation of temperature, which would have passed unperceived had the thermometer not been used. These women all were discharged from the clinic on the eleventh day following the labor.

DR. FEHLING, of Basle, considered the expression auto-infection objectionable. For a long time past Pasteur's experiments have demonstrated the important part played by the microörganisms of the air in the fermentation of the urine and milk. How does infection occur? Is it the result of contact; when and under what circumstances does it take place? As causes of these infections, microörganisms have been isolated by Koch, and their special characters studied. Gönner has made, under the direction of Garré, researches on the vaginal secretion of healthy women. He has met with staphylococci and streptococci, but he has been unable to bring about mortal infections in those animals with such germs. Winter has made at Schröder's clinic researches partly on pregnant women, partly on parts obtained from operation, and he has found that in a great many cases the uterus and its neck have no germs on their surface. No microörganism he has found has been able to give a positive result when inoculated in animals.

Döderlein, in his researches on the normal lochiæ, has found that 10 per cent. of women without fever would present microörganisms in their secretions; in one case he found streptococci; the inoculation of pure cultures in animals gave negative results. Tcherniewski, out of eighty-one cases in which he has examined the secretion of delivered women, has met with microbes in one-third of the cases. According to Bumm, no germs can be found in the lochiæ of healthy women.

He had always, in his researches, studied cases in which fever existed. He had found staphylococci and streptococci; in a case of pemphigus in a delivered woman he had found in pemphigoid bullæ a pure culture of streptococci. Grawitz's experiments have demonstrated the possibility of producing pus without staphylococci, simply by chemical irritants; he has even brought on peritonitis in such a way. He had himself observed a case of auto-infection in a delivered woman; when this woman came into his clinic she had a rapid pulse, high temperature, chills, abundant hemorrhage. She died six days after her delivery. At the autopsy he found an abscess of the kidney, with the presence of streptococci in the pus.

DR. BUMM, of Wurzburg, having examined bacteriologically several cases of parametritis, had come to the same conclusion as Fritsch; only one species of parametritis is to be recognized, and that is infectious parametritis. Traumatic parametritis, as usually described, does not exist. The name of traumatic is more often given to exudative parametritis, which, without running into an abscess, finishes by being absorbed, and so escapes histological examination. He had made researches in five cases of exudative parametritis, and had penetrated into the exudate by means of a very fine sterilized canula. In two cases of gonorrhœal parametritis he had found no microörganism, either by microscopical examination, by culture on human serum, or in other nutritive mediums.

He probably had to deal with cases which had existed for a long time; in the three other cases he found streptococci. He had made experimental researches on rabbits, and had succeeded quite easily in producing parametritis by trituration. He had also produced para-

metritis by the direct inoculation of the tissue with streptococci or staphylococci. He did not think that in the normal state one can find pathogenic microbes either in the neck of the uterus or in the vagina; the streptococci found there come from the outside. The staphylococcus aureus, which is a well-marked pathogenic microbe, is easily recognizable, and it is very doubtful whether it has ever been found in the vagina of a healthy woman.

DR. LEOPOLD, of Dresden, had reduced in his clinic the percentage of delivered patients with fever to three and two per cent., which result is due entirely to antiseptic precautions, and to thorough cleansing of the vagina. Out of five hundred and ten labors, he had had nine cases of fevers oscillating between 101.3° and 102.2°. Of these nine women, more than one was syphilitic, one presented an hæmatoma, another an old exudate, while others had a fœtus in a putrefied state. He had had two cases of death; one he attributed to auto-infection, but on careful inquiry he found that the woman had been infected per vaginam.

DR. MERMANN, of Mannheim, said that out of two hundred and seventy-five labors, which occurred in his clinic, he had observed only five and six per cent. of febrile cases. In all cases he had a temperature below 102°, and the patients left the hospital on the eleventh day. He thought that to restrict the mortality of women in labor, we ought to forbid midwifes to make any irrigations. In Saxony and Hesse there is a regulation forbiding midwifes to make any internal irrigations; they must confine their intervention to the washing of the external parts.

DR. KEHRER, of Heidelberg, said that we often find microbes in pregnant women. He had himself collected in sterilized tubes secretions from pregnant women, and inoculated these secretions in rabbits, and he obtained in all cases one or more extensive abscesses. He thought that we must employ all possible means of disinfection to attenuate or neutralize the virulence of the germs which could exist in those organs.

DR. ZIEGENSPECK, of Munich, said that we sometimes find germs in the vagina, and it is easily conceivable that an auto-infection can produce itself; it would be well to study the path followed by these microörganisms. Dr. Thonen has made researches on seven women who had normal labors; in the lochiæ of these women he had found three times a streptococcus in the vagina, and twice a streptococcus in the lochiæ obtained from the uterus.

DR. BENCKISER, of Karlsruhe, treated a woman who was taken with fever in the fifth month of her pregnancy; this woman had never been examined. As there existed a fetid secretion and, moreover, an elevated temperature, he induced premature labor. The uterine neck was closed. He made irrigations of warm water, and obtained a living fœtus of five months. The placenta was situated in the posterior region, and presented in its lower segment an hemorrhagic portion which had partially undergone decomposition. We had here a true case of auto-infection.

GONORRHŒAL PYOSALPINGITIS.

DR. WERTH, of Kiel, reported a very interesting case of a pyosalpingitis where gonococci were found not only in the pus, but also in the tissue itself of the Fallopian tube. His case was aged thirty-two, a servant, who for five weeks had been complaining of pain in the lower part of the abdomen and renal region. During the last eight days, the pains had become so severe that she was obliged to remain in bed, and had a very high fever. He removed the two tubes without any pus escaping into the abdomen; moreover, he cauterized the pedicle on each side with the thermo-cautery. The patient died four days after the operation, of septic peritonitis. At the post-mortem he found traces of a former peritonitis. The abdominal wound was well closed; no pus was found in the abdomen, the mesenteric glands were hypertrophied, the other organs in an hyperæmic condition. As to the histological examination, he said that before the operation he found no gonococci, either in the uterine neck or in the canal of the urethra. The left tube only contained a single diplococcus, not retained in its cell. Prof. Heller succeeded, however, in staining in the pus from the right tube a number of diplococci contained in the cells of the pus, and also in the tissue of the Fallopian tube. The gonococci were situated in a mass in the epithelial layer of the tube, on a level with the uterine portion, and also in the middle of the organ.

DISINFECTED SPONGES AND CATGUT.

DR. BENCKISER, of Karlsruhe, presented catgut and sponges sterilized at a temperature of 284°. When subjected for twenty minutes to such a temperature they are absolutely sterile. To know whether catgut treated in this manner was sterile, he tried a culture in fifty tubes of agar-agar, maintained at a temperature of 98.3°, and all the tubes remained sterile.

A CASE OF EXTRA-UTERINE PREGNANCY TREATED BY INJECTIONS OF MORPHINE.

DR. WINCKEL, of Munich, reported a case of pregnancy of the left tube; the diagnosis had been confirmed by an examination of the uterine mucous membrane, which presented very clearly all the characters of the decidua. At the beginning the sac was the size of a hen's egg. He made an injection of half a grain of morphine into the fœtal sac; the patient remained in bed and had ice placed on her abdomen. At first she felt some pains; at the end of eight days he examined her again and found that the tumor had not diminished in volume. The patient feeling better, wanted to go out; he made a new injection of a quarter of a grain into the fœtal sac, and to-day he finds that the tumor has been largely reduced, although only under treatment for the past four weeks. He had treated nine cases of extra-uterine pregnancy by this method.

(To be continued.)

NEW YORK COUNTY MEDICAL ASSOCIATION.

Stated Meeting, June 17, 1889.

THE PRESIDENT, CHARLES S. WOOD, M.D., IN THE CHAIR.

DR. EDWARD G. JANEWAY read a paper on

THE DIAGNOSIS AND TREATMENT OF BASEDOW'S DISEASE.

His remarks, he said, were not intended to include the whole range of the disease, upon the main features of which he presumed that all present were sufficiently in-

formed; but from his personal observations in a considerable number of cases he trusted that he might, perhaps, be able to add something of practical interest in the directions indicated in the title announced. When well developed, and presenting all the marked features characteristic of it, Basedow's disease could be at once recognized by any one; but the case was very different in the incipiency of the affection, or when some of the characteristics were rather obscure.

At the beginning the general state of the patient's health was sometimes more apt to strike the physician, and, perhaps, led him to give a wrong name to the malady. Of the three terms most commonly used to conceal the absence of definite knowledge regarding the disease present in more or less obscure cases, neurasthenia, malaria, and lithæmia, the two former were occasionally applied to this disease. As regards neurasthenia, the presence of nervous debility gave some ground for its use, while in other cases the patient not only grew weaker, but had a sense of heat, or even elevation of temperature; thus making the diagnosis of malaria plausible. The adoption of either of these terms, however, was of bad import for the patient, for the reason that the treatment appropriate to these conditions would not subdue Basedow's disease.

Dr. Janeway said he had known even a supposition of phthisis to exist on account of the emaciation, loss of strength, and sense of warmth present, sometimes in connection with a cough due either to an intercurrent cold or to congestion dependent upon enfeeblement of the heart. In such cases the goitre pressed on the larynx and trachea, causing congestion of these parts; while the enlarged heart caused congestion of the lungs, and of itself produced some dulness. Moreover, from these causes, a modification of the respiration occurred, and patients with advanced Basedow's disease had been thought to die of phthisis when none was found at the post-mortem examination.

Each of the three factors of the disease, exophthalmos, goitre, and palpitation, might be used as a designation of disease without having regard to the nature of the process. It was not uncommon for the exophthalmos to be overlooked by the patient and his friends, owing to its gradual supervention. Graefe's diagnostic rule, that the upper lid does not follow the eyeball, as in the normal state, on looking downward, was not a certain criterion, for we might not find it in all cases where slight exophthalmos existed. Moreover, Dr. Janeway had seen it present in one eye and absent in the other. An experienced physician could often detect the exophthalmos when its presence is unexpected; and an excellent test was to ask of old acquaintances who have not seen the patient for some time their conclusion in the case. It was to be remembered, of course, however, that every case of exophthalmos was not dependent upon Basedow's disease.

The enlargement of the thyroid gland might deceive by its presence or mislead by its apparent absence. In the milder cases the slight growth or vascular engorgement of the thyroid (the patient having in the meanwhile grown thinner) might keep the neck of only normal fulness. Attention, however, to the condition of the circulation in the neck would seem to prevent misconception. Even when the thyroid was but little enlarged, the peculiar vascular turgescence, arterial thrill, and arterial and venous murmurs could be made out. Where the thyroid was enlarged, the thrill was particularly noticeable in the inferior thyroid arteries; while when this was not the case, he had felt it rather in the carotids themselves. Basedow's disease had sometimes been mistaken for aneurism, on account of the enlargement, thrill, and accompanying murmurs; and this was particularly apt to be the case when the enlargement was predominantly on one side. An occasional case would present the difficulty of deciding whether the disease was an illustration of parenchymatous goitre accompanied by palpitation or belonged more to Basedow's disease.

The condition of the part might be misleading in several ways. (1) Basedow's disease may complicate organic heart disease of preëxistent date.

(2) At times it becomes difficult to determine whether a murmur of mitral insufficiency is due to an old lesion or is dependent upon muscular incompetence or relative insufficiency of the mitral valve. Dr. Janeway said he had known hearts considerably enlarged so far as the left ventricle was concerned, having well-marked systolic murmurs, audible posteriorly, yield under treatment to such a degree that the murmur disappeared and the heart returned to a nearly normal size. This constituted one of the greatest liabilities in the way of diagnostic error in cases possessed of moderate goitre and exophthalmos, as the tendency was to consider the case one of incurable cardiac disease.

In certain cases to which sufficient attention, he thought, had not been paid, the patient would suddenly fall or have his legs give way under him, but would almost immediately be able to resume the standing position or walk. The question of cerebral or spinal disease might be raised in connection with these; but the rapidity of the occurrence and of its disappearance disproved such a hypothesis. The cases in which he had met with it had been weakened by diarrhœa or vomiting, or as a result of the malnutrition accompanying the disease, and had, under excitement or physical exertion, extremely rapid heart action.

(3) As previously mentioned, the congestion of the lungs from the weakened heart may raise the suspicion of phthisis.

(4) Cases are met with of palpitation without exophthalmos or goitre, but having, as far as the heart and general condition are concerned, phenomena identical with those occurring in exophthalmic goitre. Dr. Janeway said he had been accustomed to consider such cases allied to the disease.

As to the condition of the heart in Basedow's disease, his experience was that cases occur without very marked enlargement. Others, however, were met with in which, with an antecedent history of freedom from cardiac disease, hypertrophy with dilatation is produced by the disease.

Irritable vomiting was at times a very distressing accompaniment of Basedow's disease, and might even be a cause of death.

The treatment, he said, must have relation to the condition of the circulation, to the accompanying anæmia, and to any coëxisting irregularity in the functions of the body, especially menstrual disorder. It was well to remember, however, that menstrual irregularity might be a result rather than a cause of the trouble. One of the most prominent factors in treatment consisted in finding

an agent which will quiet the rapidity of the heart's action. Dr. Janeway's experience has led him to discontinue digitalis in these cases. Formerly, he employed tincture of aconite to considerable extent, and he had seen good results from it in cases where but for the name of the disease he would not have ventured to use it. As a rule, he had the best results from the continued use of small doses.

Of late, however, he had employed the tincture of strophanthus in doses of five minims three times a day, gradually increased if necessary. Of eight cases in which he had used it, he had no information of the result in three; in two a cure had occurred; the only other remedy employed being iron. In one other, complicated with mitral insufficiency and considerable dilated hypertrophy of the left ventricle, there had been a cessation of the palpitation and a considerable improvement in the heart's condition. In the seventh case recovery had occurred, but galvanism was also used. The eighth patient had such irritable vomiting that it was impossible to give the remedy, or even to administer much food, by the mouth, and she succumbed to the exhaustion of the disease and vomiting in a neighboring city, after she had passed from his immediate observation. On the whole, the results from strophanthus had been such that he could add his endorsement to that of others of its utility in this disease. It had succeeded in cases where digitalis had failed, and he preferred it to aconite as less dangerous, particularly in cases where the heart was somewhat enfeebled. He had tried spartein in two cases, but in neither did it prove of much service. In one of these aconite, galvanism, and iron produced a marked improvement.

It was formerly his custom in all cases to advise galvanism, in conjunction with iron and some cardiac remedy, but he had had no case of cure where galvanism was used alone. More recent cases treated by strophanthus and iron had recovered, or improved as rapidly and as thoroughly as the cases in which galvanism was formerly employed, and such results naturally raised the question whether the good results obtained when galvanism was used were not in reality due to the cardiac remedy employed at the same time. Personally, he had not used atropia, though he had seen cases in which it had been used, but without favorable result. Rest, both physical and mental, was a necessary adjuvant in the treatment; as well as the avoidance of worry and of emotional excitement.

It was reasonable to suppose that the condition of the circulation in this disease tended to produce the restlessness, often associated with insomnia, met with in some cases, and in a certain proportion of these it would yield to the ordinary treatment mentioned. In one case he had used sulphonal with good results. Formerly, choice had to be made of the bromides, morphia, or, preferably, codeia, and chloral, or the use of the wet pack or bath. Iron was not invariably necessary, but was usually indicated by the coexisting anæmia. Attention should be paid to the condition of the nutrition, as evidenced by the appetite and general feeling, and by the weight of the body; and whenever this was at fault, appropriate measures should be employed to secure an improvement. In conclusion, he said that confidence on the part of the physician that he could produce an amelioration was of decided benefit. Moreover, it had seemed to him that hospital and dispensary patients were less amenable to treatment than those in the better walks of life. When fright or worry was a prominent factor in the production of the disease, it certainly did not add to the efficacy of the treatment to have a patient surrounded by the sick and dying.

DR. N. J. HEPBURN said that he felt greatly indebted to Dr. Janeway for the practical points which he had given from his rich personal experience. He thought that not infrequently cases are met with in which the ordinary symptoms were absent. Only that day he had seen a case in which the only sign of the disease was a slight enlargement of the thyroid. There was no organic heart disease, but a murmur could be distinguished which was probably anæmic in character. The trouble had lasted about ten months, and very little treatment had been resorted to. The patient's first question was: "Can I get well?" and he thought this was a difficult question to answer. In regard to the treatment, he said he was afraid that we should always be more or less in the dark until the true lesion of exophthalmic goitre was discovered. As to this lesion, it had been supposed that it belonged to the cervical sympathetic. A recent author, in one of the British journals, however, claimed that the trouble was located in the fourth ventricle, and that the cervical sympathetic was perfectly healthy. It seemed possible, however, that there might be some reflex irritation connecting the two lesions. The multiplicity of remedies which had been employed in Basedow's disease, he thought, was an indication of the obscurity of its pathology.

DR. ALFRED T. CARROLL said that his experience with this affection had not been very large, but was large enough to teach him that we need not only a better treatment than we now have, but a better clinical history of the disease than any of the text-books give. He thought it probable that there were a certain number of cases which occurred and which were never recognized by the physician as cases of exophthalmic goitre. The circulatory troubles were usually the first to be noticed. In all the cases but one that he had seen, there had been as the starting-point a shock or fright; some sudden disturbance lighting up the train of symptoms which we recognized as constituting exophthalmic goitre. In one case, that of a lady, the trouble was caused by the news of the sudden death of a favorite brother.

Dr. Carroll presented sphygmographic tracings from three cases which recovered; the tracing in one instance being nearly normal, and in the other two showing marked disturbances of the circulation. In the treatment he had derived no benefit from galvanization of the cervical sympathetic formerly so much practised; but he had found veratrum viride of considerable service. He agreed with Dr. Janeway as to the inefficiency of digitalis in this disease.

DR. J. P. OBERNDORFER related a case which he had under observation for about two years. For the first two or three months he employed galvanism alone, but, finding no improvement result, he then abandoned it. Like Dr. Janeway, he saw no benefit derived from digitalis, and the only thing which seemed to do her any good was opium, or, rather, morphia. This retarded the rapidity of the pulse and strengthened its force; but the patient finally died from the exhaustion resulting from an uncontrollable diarrhœa.

THE PRESIDENT said that, as had been mentioned in the paper, in some of the cases the disease abated without any known cause. Some years ago he saw a case of Basedow's disease in which the patient was taken with pneumonia. He was treated with antimony in connection with Dover's powder, and after the pneumonia cleared up the exophthalmic goitre became markedly diminished, and did not increase in severity again.

DR. JANEWAY, in closing the discussion, said that certain points had been brought up by the speakers to which he did not allude in his paper. He said nothing about the pathology because this was so extremely obscure. In some of the cases in which autopsies were made the cervical sympathetic had been found entirely normal, and this would certainly disprove the hypothesis that the lesion of Basedow's disease was located in this portion of the nervous system. More recent investigations would seem to show that the trouble originated, either directly or indirectly, in the medulla oblongata. As to the starting-point of the disease, from a clinical point of view it would not do always to attribute this to such a cause as fright or emotional excitement. In one of the cases reported in the paper, where the patient was a lawyer of distinction, there was no fright, no special anxiety, and no mental strain from overwork. In this instance a complete recovery followed the use of strophanthus and iron. It was a well-demonstrated fact, however, that a great many of the cases do originate from fright, worry, or emotional excitement. Hence, the disease was more common in females than in males; though he had met with a considerable number of cases in men.

He thought it advisable to avoid, if possible, the use of such agents as opium, as sooner or later the nutrition would become affected by the drug, and it was of the highest importance that the nutrition should be maintained as perfect as possible. He had met with cases in which strophanthus and other appropriate remedies produced no benefit as long as the nutrition was interfered with, but when this had become improved the distinctive features of the disease rapidly improved under their use. In neuralgias, also, and all chronic nervous diseases he disliked to use opium for the same reason. There were, however, certain cases of Basedow's disease attended with rapidity of the heart's action in which nothing acted so efficiently in controlling this symptom as opium, and the same was true of some cases of aneurism in the region of the neck.

DR. J. LEWIS SMITH said that all the cases of Basedow's disease which he had met with were in women between the ages of twenty and thirty-five. In one case that he recalled, in which all the characteristic signs of the disease were present, and in so marked a form that the patient's appearance attracted attention on the street, a perfect recovery was secured, principally through the use of aconite.

(To be continued.)

CORRESPONDENCE.

A WINTER VACATION TO THE WINDWARD ISLANDS.

I.

LYING at our very threshold, as we moderns understand distance, there exists a region in which the past of a century seems incorporated into the present as vividly as we could project the picture of some old ruin upon a screen. Here were contributed the first chapters to the wonderful story of our Western World, the home of tradition and the most fascinating romance that so closely borders upon crime. Spaniard, Frenchman, and sturdy Saxon, if at peace elsewhere throughout the world, never met here except in warfare. Here was the school in which England learned to gain and keep the mastery of the sea; where Spanish power was first ground to dust, and French greed lost its grip upon the treasure house of the West. All this and more will be accepted as solemn truth by every boy who has absorbed the literature of the Spanish Main and Windward Islands.

It was not choice but stern necessity that compelled me to look in the direction of the Windward Islands as a health resort, and the fact that my selection proved a wise one, and that I had made the discovery of a new region for the climatic treatment of the chronic catarrhs of our northern winters has led me to offer to the readers of THE NEWS a few letters descriptive of my voyage. "Where are the Windward and Leeward Islands?" was a question that was put to me by nearly everybody who learned of my plans—a question that I answered in a variety of ways. In fact a geographical region that is defined on one side by the direction from which the wind comes, and on the other by whither it blows, has about it a delightful uncertainty that permits considerable latitude of description.

If you are living upon the bank of a river you speak of any place above you as up stream and any place below as down. It is so with the Creole of the Lesser Antilles: all the islands situated to the south of the one he inhabits are "Windward Islands" and those to the north are "Leeward." At the same time, when he travels he goes down the islands by going north from Trinidad, or south if he begins his journey from St. Croix. Let the reader take his map, and, drawing a line south of the islands of St. Croix and St. Bartholomew, he makes all those islands lying to the south the Windward Islands. In this way he groups them geologically; for all, with the exception of Antigua and Barbadoes, are volcanic in origin, while there is no evidence of recent igneous formation in those lying to the north and westward. According to the geographers, however, he must draw his line at Martinique, thence south to Trinidad, they are called the Windward Islands, while those to the eastward of Porto Rica are the Leeward Islands. The description of their place on earth is vague, but why should it not be so since they are as beautiful as some exquisite dream?

It is not in acccordance with good ethical rules to find fault with the ship that brought you safe over, but the truth in the matter may just as well be told once for all. The steamer "Barracouta" was a wet ship. She took water over her bow, and on the slightest chance it would come over her weather side, it percolated through the deck, and from mysterious regions known only to the ship's plumber. She was built, like all steamers that voyage to the Carribean Sea, flat-bottomed and without a keel. Of course she lacked stability, and had a capacity to roll that exceeded belief. Give her a beam sea and she would roll her decks under in good weather. We started out a crowd of sixty, at least ten more than the saloon capacity of the ship, mostly round-trip tourists like

myself. For the first few days we eyed one another coldly and with suspicion after the manner of strangers. But the water melted away our reserve and after we had been thrown into each other's laps sufficiently often we were macerated and shaken down into a very homogeneous and happy family.

After six days we found ourselves one Sunday morning at rest off the town of Frederickstedt, in the Island of St. Croix. A pretty village nestled in its grove of palms. A whitewashed fort, from which floated the Danish flag, frowned at us from the beach. Behind lay the island in a series of receding peaks, clothed in a profusion of tropic verdure. About the low-browed summits hung masses of cloud. From off the shore came a mysterious odor of the tropics, fresh and sweet, a sound of church bells, a restful murmur of surf. I was on shore as soon as I could get breakfast. The houses were low stone buildings, with gardens enclosed in plastered stone walls. Everything appeared very solid, old and well preserved. The interior met all our expectations, as viewed from the deck of the steamer. One beauty after another feasted our eyes in rapid succession. The island is mountainous, sharp cones, with interlying valleys. The rain in the morning left its effects in detached masses of heavy cloud that was hurried along before the stiff northeast trades and produced magical effects of shadows. One mountain apex would stand grand and obscure in its cap of cloud, while a near summit revealed sharply every detail of rock and foliage in the glare of the tropic sun. In the deep valleys the contrasts of light and shade gave immensity and to some winding vistas too profound a depth and gloom for the abode of man, while ever under your gaze in its widest features there would be a burst of sunlight revealing the exuberance of life and foliage. The variety of color that clothed the sides of the mountains and valleys was remarkable. The mango grew in groups with a green as dark as night, the light green of wide stretches of cane-field, and a shade just dark enough for contrast of the graceful palms; the rich red and brown of newly plowed land and the gray and purple of protruding masses of rock. As we gained the summit of a dividing ridge we had a view that equalled anything the earth can produce; not so grand as many, but full of the peace and gentleness that typify nature in her fulness of beauty. A winding valley threading its way amid a procession of mountains that, through their gateways of green, gave a receding vista of glens and valleys in brilliant light and patches of shadow with every color that can grace the earth, ending in a wide expanse of the Carribean Sea, and a sky line that melted into a greenish-purple haze.

It was painful to see amid all these beauties the traces of a Negro insurrection that held the island for three days and left ruined plantations on every side. Some old residents told me that forty or fifty years ago the island was a favorite winter resort of people from the States, bringing with them their horses and carriages. No more exquisite winter climate can be imagined. The temperature does not exceed 80°, always tempered by the northeast trades, and on some of the higher peaks a temperature of 65° or 70° can be found.

We were on board the steamer for six o'clock dinner, and at eight o'clock we weighed anchor and steamed away on our course down the islands.

ELY VAN DE WARKER.

DEATH FROM SULPHONAL.

To the Editor of THE MEDICAL NEWS,

SIR: I report the following case of death from sulphonal, which resembles, except in its issue, Case III. reported by Dr. Hay in the July number of the *American Journal of the Medical Sciences*, for in spite of the numerous examples of disagreeable after-effects, it is still constantly recommended as safe in doses exceeding that I gave with fatal result. Kast, in his original report, and other observers have warned against large doses to females on account of especial susceptibility, but I fear that the continual repetition of its safety and freedom from action on pulse, temperature, and respiration, will make others careless as it did myself.

Miss B., aged twenty-eight, American, dressmaker, was thrown from a carriage two years ago. Since then she suffered constantly from irritation of the spine and the symptoms of neurasthenia became marked, but she continued to use the sewing machine as much as her strength would permit. There was no evidence of organic lesion. Neither rest, tonics, nor any form of local treatment caused improvement. She was always very nervous and now had almost constant headache. The excitement of a slander suit decided against her friends caused her to become entirely insane. The type was melancholia, but for a few days hysterical symptoms predominated. The first night she obtained several hours sleep by means of chloral, but her condition was such the next day that I thought the chloral did more harm than the sleep did good, so for several days I simply gave her frequent small doses of cannabis Indica and potassium bromide, pushing her food as much as possible. Some nights she obtained no sleep and sometimes considerable. I then gave her xl ♏ of paraldehyde with no effect at all. Next day she received no medicine and at night I gave her fifteen grains of sulphonal and in one and a quarter hours, patient being still wild and wakeful,she was given fifteen grains more. She soon went to sleep and slept quietly till I saw her twelve hours later. She was then sleeping naturally, and for the next twelve hours she could be easily roused enough to swallow and by energetic stimulation enough to talk rationally, but when let alone would at once be asleep. Pulse 95, respiration but slightly accelerated, pupils normal.

About eighteen hours after taking the sulphonal, the pupils being contracted, $\frac{1}{100}$ grain of atropine was injected hypodermatically and from this on till near her death the pupils were neither unduly contracted nor dilated and responded to light. Aside from the atropine no remedy seemed to have any effect, though in all about $\frac{1}{12}$ of a grain of strychnine was injected, the faradic current, aromatic spirits of ammonia, and later whiskey were freely used.

Her temperature taken about the eighteenth hour was 102°. Leaving her about the twenty-second hour able to answer and strike those who were keeping her awake, I found her on my return an hour afterward apparently dying, greatly cyanosed and scarcely breathing. In trying to keep her up, her head had been allowed to fall forward; I made a complete extension of the head and she began at once to breathe freely. After failure of respiration began, her pulse being good, artificial respiration was kept up for several hours, but finally the

cyanosis began to increase and she died of failure of respiration forty hours after taking the sulphonal.

R. R. PETITT, M.D.

DAYTON, OHIO.

NEWS ITEMS.

Report of the United States Board of Inquiry Concerning Epidemic Diseases among Swine.—The Commission, consisting of Drs. E. O. Shakespeare, R. Meade Bolton, and T. J. Burrill, appointed last November by the Commissioner of Agriculture to examine and report upon the causes and means of prevention of hog cholera, have just forwarded the report of their inquiry, which was cut short by the exhaustion of the appropriation at the disposal of the Department for the investigation.

The conclusions of the Commission are as follows:

1. It is the opinion of the Commission, based upon their own individual observations and examinations of the subject, that there are at least two widespread epidemic diseases of hogs in this country which are caused by different microörganisms, but which have a clinical history and pathological lesions more or less similar and very difficult to distinguish without the aid of the microscope and resort to bacteriological methods; and that these two epidemic diseases have been fairly well described in the recent annual reports of the Bureau of Animal Industry, except it does not appear that "hog cholera" of these reports can be said to have its special or exclusive seat in the digestive tract of the animal as distinct from the lungs. So far as the knowledge and the observation of the Commission go, one of these epidemic diseases, viz., that called by the Bureau authorities "swine plague," appears to be far less prevalent than the other which has been named by them "hog cholera."

The Commission are further of the opinion that the disease called by the authorities at Washington "hog cholera" is caused by the specific action of a certain microbe named by them "the hog cholera germ," which has certain characteristics of form, size, movement, mode of growth in artificial cultures, and action upon certain lower animals, and taken together enable one to distinguish it from other microbes which have been described from time to time by various authors as present in swine disease, and that the descriptions of this microbe and its peculiarities, as set forth in recent annual reports of the Bureau of Animal Industry, are fairly accurate.

The Commission are also of the opinion, although to a less positive degree, that the epidemic disease called by the Bureau authorities "swine plague," has as its specific cause a certain microbe possessing characteristics which have been fairly well described in recent annual reports of the Bureau of Animal Industry, which distinguish it both biologically and pathologically from the first-mentioned "germ of hog cholera."

2. It is the opinion of the Commission that the actual and undeniable proof of the pathogenic relations between the so-called "hog cholera" germ, above mentioned, and the disease of hog cholera was first published in the annual report of the Department of Agriculture for 1885, and in the second annual report of the Bureau of Animal Industry of the same year, hence was not antedated with respect to epidemic diseases of swine existing in the United States. The discovery of the disease called "swine plague," and of the microbe to which it is due, must be considered original, on the part of the Bureau authorities, at least as far as work in the United States is concerned.

3. In the opinion of the Commission the epidemic disease of swine investigated by Drs. Billings and Roberts, in Nebraska, however seemingly different in the published descriptions, is identical in its clinical features, pathological lesions and specific cause, with the disease investigated by the Bureau of Animal Industry at Washington, and called by the latter "hog cholera;" and, furthermore, that the pathogenic microbe which is the specific cause of this disease is identical in both instances. It is also their opinion that the descriptions of this germ, published by each of these investigators, are in the main correct. The two chief points in these descriptions upon which the above-mentioned investigators have differed more or less widely, are as to some minor points of morphology and variation of the behavior of the microbe under various methods of staining.

4. It is the opinion of the Commission that the microbe which Dr. Detmers at present regards as the specific cause of "hog cholera" is probably the same microbe which is considered by the Bureau authorities as the specific cause of hog cholera; but, according to present requirements of bacterial research and interpretation, it is impossible to declare that the organism as described by him in his reports, published by the Department of Agriculture, was the same thing.

In their observation of the methods of bacteriological research pursued by the Bureau of Animal Industry at Washington, the Commission are of the opinion that as to carefulness and precision they are up to the standard of modern requirements concerning bacteriological investigations. They are essentially the same as those pursued at Berlin in the Pathological Laboratory of the Imperial Board of Health, and in the Hygenic Institute, of which Professor Koch is the head.

From their observation of the methods of bacteriological research pursued by Dr. Billings, in Nebraska, the Commission are of the opinion that it was difficult, if not inpossible, for that distinguished investigator, by his usual method, to discover and isolate a germ associated with "the hog cholera germ" in the tissues of the body of the pig, and this is particularly true of the so-called "swine plague" germ, claimed by the Bureau authorities to be the specific cause of the epidemic disease atterly named by them "swine plague." In the opinion of the Commission, therefore, the failure of Dr. Billings in his researches to find the so-called "swine plague" germ in the tissues of the spleen (the organ from which he almost invariably made his cultures) cannot be regarded as incontestable proof that the "swine plague" germ has had no existence in the afflicted hogs which have fallen under his observation, and affords no evidence that this last-named disease does not occur in Nebraska.

The Commission regard their experiments concerning immunity as inconclusive and more or less indefinite; yet it seems to be evident that there is a certain degree of protection against artificial acquisition of hog cholera possessed by the Nebraska pigs which had been inoculated and which had recovered from the natural disease, the latter appearing to be slightly less protected than the former. Furthermore, the feeding experiments above mentioned appear to indicate that the hog can be arti-

ficially protected against the action of the virulent living cultures even to a greater degree by introducing the germs into the stomach than by subcutaneous inoculation.

It is the opinion of the Commission that the only proper way to test practically the real value of artificial protection against "hog cholera" is to expose the supposed protected pig to the natural acquisition of the disease under ordinary conditions, such as exist among a herd of hogs suffering from the natural disease. It is a well-known fact brought to light by recent investigations concerning the nature of infectious diseases, that immunity or protection from a second attack, whether artificial or natural, is not absolute, but only relative in degree. There is no known infectious disease, either of man or beast, capable of producing by one attack a degree of protection which is surely and absolutely effective against a second attack.

Experience has abundantly shown that animals which are naturally or artificially protected can be practically overwhelmed by enormous doses of the germs of the disease, and thus be made to suffer a recurrent attack, which may even be fatal. Furthermore, the method of artificial inoculation, and the mode of natural acquisition of the disease, also seem to influence materially the degree of protection acquired. For example, it is well known that Pasteur has put into extensive practical application in France his method of producing artificial immunity against anthrax in sheep and cattle by subcutaneous inoculation, and it is also well known that the losses by this disease among herds where the inoculation has been thus performed has been reduced 90 per cent. as the result of inoculation; yet Koch, as an opponent of Pasteur concerning the practical value of protective inoculation, has demonstrated beyond cavil that cattle in which subcutaneous inoculation has been practised are but little protected against the acquisition of the disease experimentally by way of the digestive apparatus.

It is the opinion of the Commission that disinfection as a general practical means of preventing the enormous annual losses from diseases of swine in this country cannot be made effective under the conditions which exist in the West and other regions where hog raising is extensive.

As far as our present knowledge extends treatment of existing cases is utterly futile. There remain, therefore, to be considered but two alternative means of prevention—quarantine and extermination of infected hogs, with their surroundings, or on the other hand, some form of preventive inoculation.

The vast importance of the subject calls for an exhaustive investigation as early as possible of this latter means, for the former is very difficult of application.

Some of the tests made in Nebraska under the direction of Dr. Billings certainly give promise of great possibilities in this direction. It is the opinion of the Commission, however, that an attempt to produce immunity from "hog cholera" artificially by the use of the living germs of the disease, either through the stomach or through hypodermic inoculation is very objectionable, and involves a serious risk of more widely extending the disease and increasing rather than diminishing the already enormous losses therefrom. For every hog thus treated becomes, for a time at least, a centre of infection from which an epidemic may directly or indirectly spread widely. Furthermore, the use of the living germs seems, at least in many instances, to stunt permanently the growth of the pig. Experience acquired in recent years shows that the chemical products of certain disease-producing germs in artificial cultures possess the same power to create immunity as do the living germs themselves; and some incomplete experiments performed by ourselves and others seem to indicate strongly that the chemical products of the "hog cholera" germ in artificial cultures also possess a similar power.

If further investigation shall prove this to be an indisputable fact, then, in our opinion, a safe, harmless, efficient, and extremely practical means of preventing "hog cholera" free from any risk of thereby extending the disease and continuing the enormous losses at present suffered by our countrymen will soon follow.

We have reason to believe that the threshold of such an important discovery has already been crossed; and we, therefore, earnestly advise that thorough and exhaustive investigations be as rapidly as possible made in this direction, and without stint of money or hampering limitations of time.

The Sale of Tuberculous Flesh and Milk.—The *British Medical Journal* of July 6th, says that the Scottish Veterinary Association, at a recent meeting in Edinburgh, considered a motion submitted by Prof. W. O. Williams, "That the Society thoroughly believing that tuberculosis is a contagious disease, urge upon the Government—first, to stop the sale of milk from animals suspected of being infected; secondly, to suppress the consumption of meat from tubercular animals; and, thirdly, to give compensation for a limited number of years." In the discussion of this motion it was apparent that though there were differences of opinion as to how much of an affected animal ought to be condemned as unfit for food, all the speakers were in favor of visibly diseased parts being destroyed, and were of opinion that the milk from diseased animals was especially dangerous. They were also unanimously in favor of legislation to stamp out the disease, to secure proper inspection at abbatoirs, and moderate compensation to owners. A committee was appointed to draw up a memorial to Government to secure these objects and to take action in the matter with other societies.

Natural Purification of Polluted Streams.—The growing population of the many cities which discharge their sewage into rivers gives increasing importance to the question how great a degree of pollution is allowable in a stream of given flow, the water of which is to be used lower down for domestic or for manufacturing purposes. Mr. Rudolph Hering says that oxidation and decomposition of sewage matter were for a long time thought to be the main cause for the clarification of polluted rivers. To-day it is known to be but a minor cause compared with dilution and subsidence; and if the sewage is discharged in a fresh condition into a stream of water, its destruction is in part due to fish and other aquatic animals. Some of the refuse from stock-yards is disposed of, no doubt, in this way. Most of the decomposition, or oxidation as it is usually termed, of sewage is effected by the myriads of microscopic plants, microbes, or bacteria contained in both air and water, which at once seize upon dead organic matter. For purifying the

sewage discharged into a river, oxidation can be depended upon only to a limited extent, because of the comparative slowness with which it takes place. Subsidence of the heavier matter tends to clarify it before it flows many miles; dilution with a sufficient quantity of clean water prevents an offensiveness almost at once; but oxidation requires many days under continuous aëration of the river. From a comparison of data in regard to the actual purification of polluted streams we may draw the following inference: Rivers not to be used for water-supplies, but to be inoffensive to communities residing a few miles below, to remain fit for ordinary manufacturing purposes, and to sustain the life of fish, may receive the sewage from one thousand persons for at least every one hundred and fifty to two hundred cubic feet of minimum flow per minute, supposing that natural subsidence of the heavier matter takes place immediately below the town discharging the sewage. Beyond the above limit it appears to be advisable to resort to land or other filtration, or to chemical precipitation. — *Popular Science Monthly*, April, 1889.

A Royal Ophthalmologist.—H. R. H. DUKE CHARLES, M.D., of Bavaria, continues in the Bavarian Tyrol the philanthrophic practice of ophthalmic surgery, to which he devotes the spring months in the Austrian Tyrol. On the 3d instant, at the Tegern See, he performed with complete success his one-thousandth operation for cataract. For the occasion, which was a festive one, the surgical theatre was decorated with flowers by the sisters of the hospital, of which his Royal Highness is the patron and working president.—*Lancet*, July 13, 1889.

In Memory of Dr. James B. Hunter.—The New York Obstetrical Society has adopted the following resolutions on the death of Dr. James B. Hunter:

Whereas it has pleased Almighty God in his infinite wisdom to remove from our midst our friend and colleague, Dr. James Bradbridge Hunter, in the prime of his life and in the morning of his usefulness, therefore be it

Resolved, That, while we bow in submission before His supreme will, we recognize in His fiat the loss of one beloved and honored by us all for his gentle virtues and manly qualities, of one who will long be regretted, and whose place will forever remain unfilled amongst us.

Resolved, That, in his removal the entire profession of medicine in America suffers a loss which cannot fail to be appreciated by all connected with it.

Resolved, That the kind sympathy of this Society, for which he has done so much, and its sincere condolence be tendered to his bereaved family; and that it cause a copy of these resolutions to be spread upon its minutes, published in several of the daily and medical journals of the city, and transmitted to his immediate relatives.

Corrigendum.

To the Editor of THE MEDICAL NEWS,

SIR: Permit me to correct an erroneous phrase in the report of my paper read at the recent meeting of the American Otological Society, as published in your issue of July 27th. It reads: "Contesting the view that any colobomatous opening in the flaccid membrane *was* wholly negatived by modern embryologists;" whereas it should be: "Contesting the view . . . *as* wholly negatived." The change is slight, but it wholly perverts the cardinal meaning of my paper, which is essentially a protest against the assumption that the "foramen of Rivinius" is anything else than a pathological perforation.

Very respectfully yours, B. ALEX. RANDALL.

1806 CHESTNUT ST, PHILADA., August 5, 1889.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JULY 30 TO AUGUST 5, 1889.

By direction of the Acting Secretary of War, leave of absence for seven days is granted ANDREW K. SMITH, *Colonel and Surgeon.*—Par. 12, *S. O. 178, A. G. O.*, August 3, 1889.

HALL, WILLIAM R., *Captain and Assistant Surgeon.*—Leave of absence for ten days is granted.—Par. 5. *S. O. 60, Headquarters Department of Dakota*, July 27, 1889.

ROBINSON, SAMUEL Q., *Captain and Assistant Surgeon.*—The leave of absence for two weeks, granted by Par. 11, S. O. 165, from these headquarters, is hereby extended ten days.—Par. 8, *S. O. 272, Headquarters Division of the Atlantic*, July 30, 1889.

MAUS, LOUIS M., *Captain and Assistant Surgeon* (Fort Porter, New York).—Leave of absence for twenty days, on surgeon's certificate of disability, is hereby granted.—Par. 2, *S. O. 273, Headquarters Division of the Atlantic*, August 1, 1889.

By direction of the Secretary of War, so much of Par. 1, S. O. 159, A. G. O., July 12, 1889, as directs LOUIS BRECHEMIN, *Captain and Assistant Surgeon*, to return to his station at the close of the encampment of the Illinois National Guard, is amended to direct him to report in person, not later than August 20, 1889, at Fort Robinson, Nebraska, for duty at that place.—*S. O. 174, Headquarters of the Army, Adjutant General's Office, Washington*, July 30, 1889.

HARRIS, H. S. T., *First Lieutenant and Assistant Surgeon.*—The leave of absence granted in S. O. 140, A. G. O., June 18, 1889, is further extended two months.—Par. 9, *S. O. 176, A. G. O.*, August 1, 1889.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING AUGUST 3, 1889.

BRYANT, P. H., *Assistant Surgeon.*—Ordered to temporary duty on iron clads, Richmond, Virginia.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FROM JULY 20, TO AUGUST 3, 1889.

HUTTON, W. H. H., *Surgeon.*—When relieved at Mobile, Alabama, to assume command of the Service at Baltimore, Maryland, July 23, 1889.

PURVIANCE, GEORGE, *Surgeon.*—When relieved at Baltimore, Maryland, to assume command of the Service at Philadelphia, Pa., July 24, 1889.

GASSAWAY, J. M., *Surgeon.*—Ordered to New Orleans, La., for temporary duty, August 2, 1889.

GOLDSBOROUGH, C. B., *Surgeon* —Granted leave of absence for thirty days, July 29, 1889.

VAUGHAN, G. T., *Assistant Surgeon.*—Orders to Norfolk, Va. revoked; to proceed to Cairo, Illinois, for temporary duty, August 1, 1889.

GROENEVELT, J. F., *Assistant Surgeon.*—Relieved from duty at Gulf Quarantine Station; ordered to Mobile, Alabama, for temporary duty, August 3, 1889.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

All communications relating to the editorial department of the NEWS *should be addressed to No. 1004 Walnut Street, Philadelphia.*